PLANNING FOR INDIRECT FIRE SUPPORT AND AIR DEFENSE (PART I)

SUBCOURSE NO. IN0801

US ARMY INFANTRY OFFICER

01 MAY 1995

US ARMY INFANTRY SCHOOL
Fort Benning, Georgia

Five Credit Hours

GENERAL

This subcourse is designed to teach the infantry officer the identification and characteristics of the field artillery fire support organizations organic to the five types of divisions. Also, the subcourse will explain and describe the non-field artillery fire support and its capabilities and limitations. The student will learn the terms, symbols, procedures, and techniques for targeting and the fundamentals for fire support planning and coordination.

The first lesson identifies and discusses the field artillery fire support organizations organic to each of the five types of divisions, and identifies the standard field artillery, nonstandard tactical and allied tactical, and on-order missions assigned to field artillery units.

The second lesson identifies and discusses the non-field artillery sources of fire support, their characteristics, capabilities and limitations, and considerations in planning their employment.

The third lesson identifies and discusses the target terms, procedures and techniques for targeting, and the fundamentals of fire support planning and coordination.

TASK: Identify the field artillery fire support organizations organic to each of the five types of divisions; identify the standard field artillery, nonstandard tactical and allied tactical, and on-order missions assigned to field artillery units; identify non-field artillery sources of fire support, their characteristics, capabilities and limitations, and considerations in planning their employment; and identify target terms procedures for techniques for targeting and the fundamentals of fire support planning and consideration.

CONDITIONS: Given the subcourse material, a training scenario and extracts, as applicable, the student will complete the examination at the end of this subcourse.

STANDARD: The student will successfully answer 70 percent of the questions on a multiple-choice based examination for Subcourse IN0801 by identifying the field artillery fire support organizations organic to each of the five types of divisions; identifying the standard field artillery nonstandard tactical and allied tactical, and on-order missions assigned to field artillery units; identifying non-field artillery sources of fire support, their characteristics, capabilities and limitations, and considerations in planning their employment; and identifying target terms, procedures and techniques for targeting, and the fundamentals of fire support planning and coordination.

This objective supports military qualification standard (MQS) tasks:

FM 6-20-2J, Identify the field artillery fire support systems organic to the five types of divisions.

FM 6-20, Identify the four standard field artillery missions, allied tactical missions, nonstandard tactical missions, and on-order missions.

FM 6-20, Identify other fire support weapon systems for which fire support officers are responsible to plan and coordinate fires.

FM 6-20/FM 6-30, Identify the capabilities and limitations of field artillery assets and the target symbology to be included when planning and coordinating fires.

FM 6-20/FM 6-30, Identity the planning criteria and implementing procedures of a priority target and a final protective fire (FPF) in fire support planning.

FM 6-20, Identify the fire support coordination measures and explain how they are used in fire support planning.

FM 6-20, Identify the elements included in paragraph 3a(3) of the operation order.

01-2840.00-4210, Develop/review fire support plan to support unit mission.

TABLE OF CONTENTS

INTRODUCTION

To combat the Threat forces, there are many types of fire support to assist you, the infantryman, in fighting battles. In addition to our forces, support of attack helicopters, fixed-wing aircraft, and naval gunfire, you may be supported by allied forces of the same types. You must know the capabilities, characteristics, and limitations of each. In this way, you will know what to expect during combat situations requiring their direct and indirect support.

You must also understand the fundamentals of fire support planning and coordination. You need to be familiar with the targeting terms and targeting techniques that are used in fire support planning. You must know what criteria to use and the procedures needed to implement a final protective fire. A knowledge of fire support coordinating measures is also essential.

LESSON 1

FIELD ARTILLERY SYSTEMS AND MISSIONS

TASK

Identify the field artillery fire support organizations organic to each of the five types of divisions, and identify the standard field artillery, nonstandard tactical and allied tactical, and on-order missions assigned to field artillery units.

CONDITIONS

Given the subcourse materials for this lesson, a training scenario and extracts, as applicable, the student will complete the practice exercise at the end of this lesson.

STANDARD

The student will demonstrate his comprehension and knowledge of the task by identifying the field artillery fire support organizations organic to each of the five types of divisions, and by identifying the standard, nonstandard, allied tactical, and on-order missions assigned to field artillery units.

REFERENCES

FM 6-20-2J
FM 6-20

GENERAL

In this lesson, you will learn to identify the five types of field artillery in divisions and the types of missions assigned to each. You must learn the inherent responsibility and relationship of these units as they are assigned to each of the different missions. Along with this, you must learn the characteristics and circumstances of these missions while fighting alongside allied soldiers.

Learning Event 1: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE FIELD ARTILLERY FIRE SUPPORT SYSTEMS ORGANIC TO THE FIVE TYPES OF US ARMY DIVISIONS.

This learning event will cover the five types of US Army divisions and their field artillery fire support system.

ARMORED/MECHANIZED INFANTRY DIVISION ARTILLERY

The armored/mechanized infantry division artillery is organized with a headquarters battery, a target acquisition battery, three 155-mm self-propelled (SP) cannon battalions, and a multiple launch rocket system (MLRS) battery (Figure 1).

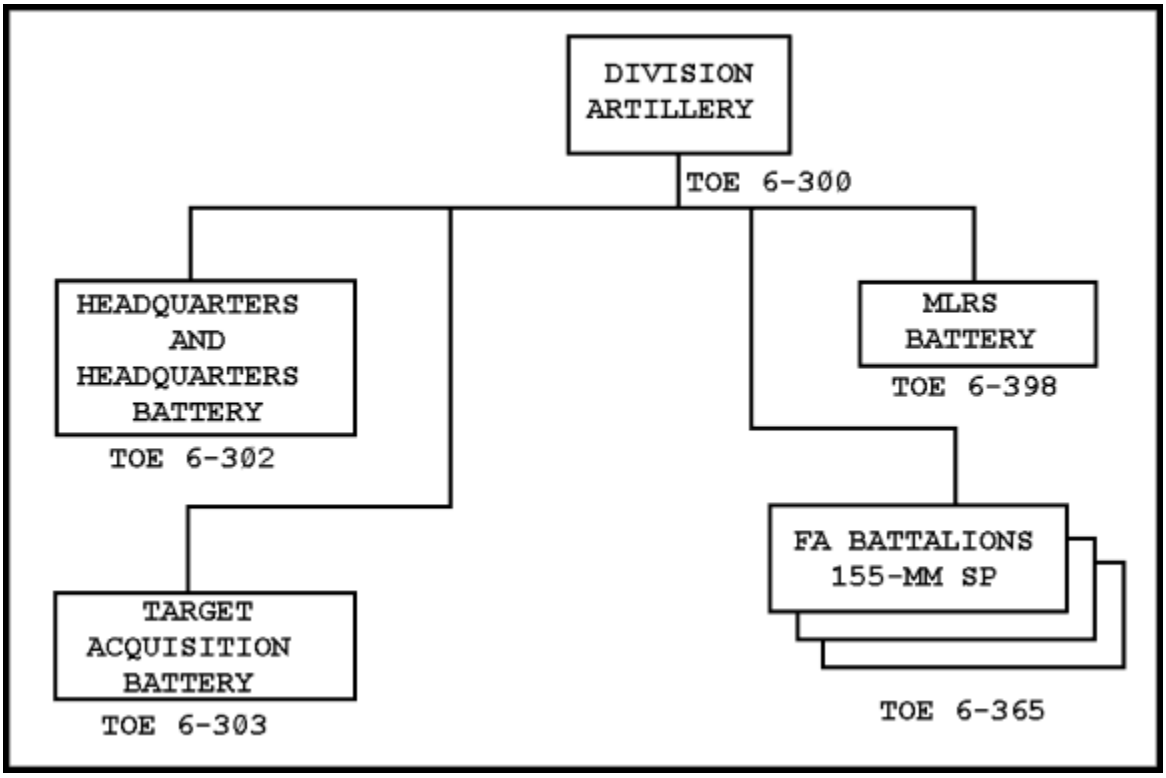


Figure 1. ARMORED/MECHANIZED INFANTRY DIVISION ARTILLERY

NOTE

Under a recent table of organization and equipment (TOE) restructure of the heavy division artillery, all 203-mm units have been moved to corps. The division artillery will have an MLRS battery instead of the 203-mm/MLRS battalion.

Headquarters and Headquarters Battery

The headquarters and headquarters battery are in two major groups. The headquarters battery includes the battery headquarters elements and the mess, maintenance, and medical sections.

Headquarters Division Artillery

The headquarters division artillery includes the division artillery headquarters section, liaison section, tactical operations center, survey platoon, meteorological section, and administrative logistics section.

Target Acquisition Battery

The target acquisition battery is in four groups. They are: the battery headquarters, survey platoon, radar platoon, and processing section.

LIGHT INFANTRY DIVISION ARTILLERY

The light infantry division artillery (Figure 2) is organized with a headquarters and headquarters battery (HHB), three 105-mm (towed) battalions, and a 155-mm (towed) battery.

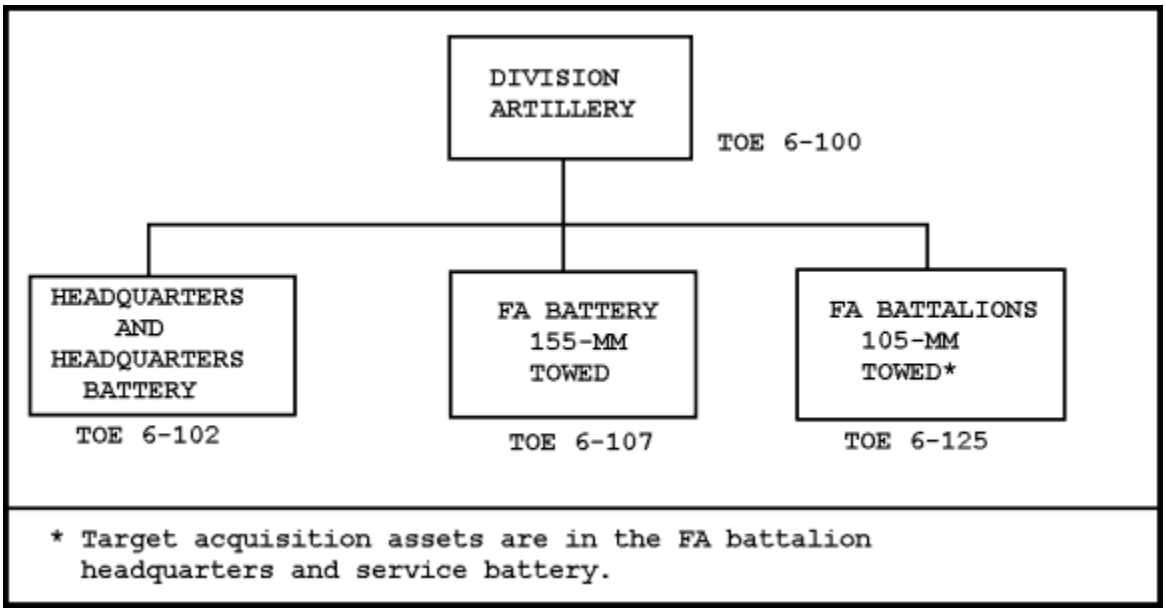


Figure 2. LIGHT INFANTRY DIVISION ARTILLERY

Headquarters and Headquarters Battery

The headquarters and headquarters battery for light infantry is similar to that of the armored/mechanized infantry division artillery with the exception of a liaison section and a few different fire support sections.

Cannon Battalions

The light infantry division artillery has three 105-mm (towed) battalions with eighteen howitzers each, also a 105-mm (towed) battery with eight guns. Field artillery acquisition assets, one AN/TPQ-36 radar, are in the 105-mm battalions.

AIRBORNE DIVISION ARTILLERY

The airborne division artillery structure is shown in figure 3. The division artillery is organized with a headquarters and headquarters battery and three 105-mm (towed) cannon battalions.

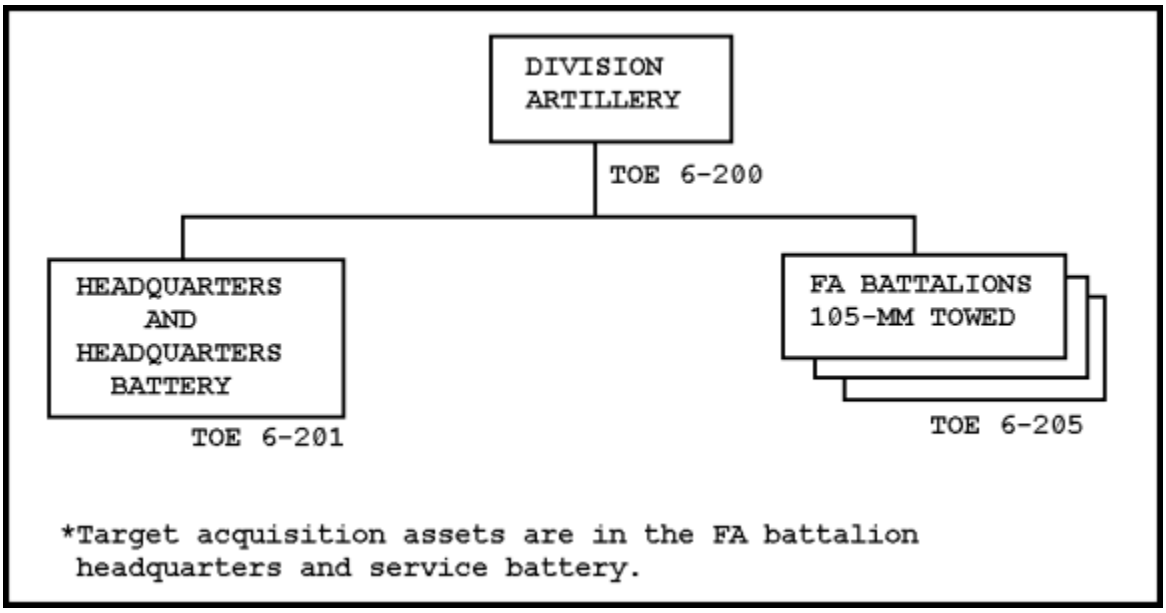


Figure 3. AIRBORNE DIVISION ARTILLERY

Headquarters and Headquarters Battery

The headquarters and headquarters battery is generally the same in organization as the light infantry division artillery headquarters and headquarters batteries. The only differences are with some of the fire support sections.

AIR ASSAULT DIVISION ARTILLERY

The air assault division artillery (Figure 4) is organized with a headquarters and headquarters battery and three 105-mm (towed) battalions.

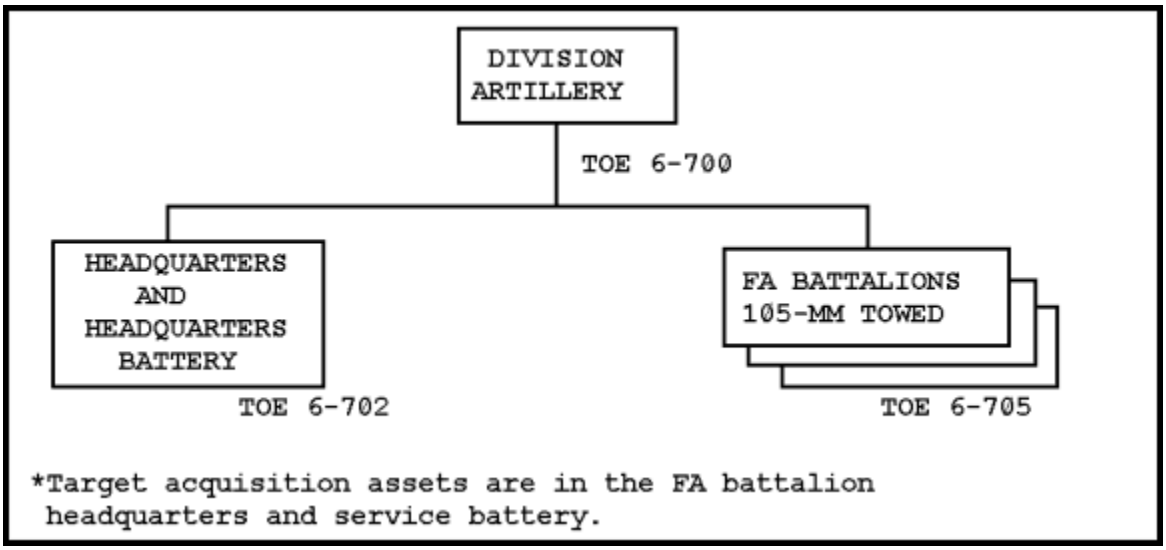


Figure 4. AIR ASSAULT DIVISION ARTILLERY

Headquarters and Headquarters Battery

The headquarters and headquarters battery (HHB) is similar to the light infantry and airborne HHBs with the only differences being with some of the fire support sections.

Cannon Battalions

The air assault division artillery has three 105-mm (towed) battalions for direct support. The cannon battalions of the air assault division operate with limited organic vehicles Therefore, they must rely heavily on outside transportation means for rapid displacement.

You have just learned about the field artillery fire support system organic to the five types of US Army divisions. In the next learning event, you will learn about the four standard tactical missions for field artillery units and the inherent responsibilities and relationships of field artillery units assigned each of these missions.

Learning Event 2: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE FOUR STANDARD TACTICAL MISSIONS FOR FIELD ARTILLERY UNITS AND THE INHERENT RESPONSIBILITIES AND RELATIONSHIPS OF FIELD ARTILLERY UNITS ASSIGNED EACH OF THESE MISSIONS.

Clearly defined, systematic, and positive command and control ensures that the field artillery contributes to total fire support. This must be in a responsive manner that is adequate to support the mission.

COMMAND RELATIONSHIPS

Command and control are established through a process referred to as an "organization for combat."

This two-step process consists of--

- Establishment of a command relationship.
- Assignment of tactical missions.

The field artillery commander derives his specific fire support responsibilities to the supported force from his designated command relationship and tactical mission. The fulfillment of these responsibilities, and ultimately the FA mission, depends on how well field artillery and maneuver commanders understand the organization and uses of the field artillery.

Unit Command Relationships

The relationship between units is described in the following four paragraphs:

Organic Units. Organic units are those forming an essential part of a military organization as shown in its table of organization and equipment (TOE) or modified table of organization and equipment (MTOE). An example is the FA cannon battery that is an organic part of a field artillery battalion.

Assigned Units. Assigned units are those placed in an organization on a relatively permanent basis for the purpose of strategically tailoring the force. A commander has essentially the same degree of command and control over assigned units as he does over organic units. An example is the FA brigade headquarters and headquarters battery assigned to a corps.

Attached Units. Attached units are units placed in an organization on a relatively temporary basis. Subject to the limitations stated in the attachment orders, the receiving commander exercises the same degree of control over attached units as he does over organic units.

Operational Control (OPCON). Operational control is a status often used between maneuver elements. However, it is rarely used to establish a relationship between a maneuver headquarters and an FA unit. Generally, OPCON has the same intent as attachment. However, in OPCON, the receiving unit has no responsibility for administrative or logistical support.

FA STANDARD TACTICAL MISSIONS

Field artillery is controlled not only through the command relationships described above, but also through the assignment of standard tactical missions. Tactical missions describe in detail the fire support responsibilities of an FA unit.

US Field Artillery Standard Tactical Missions

There are four types of US field artillery standard tactical missions. They include--

- Direct support.
- Reinforcing.
- General support reinforcing.
- General support.

Tactical missions also establish the fire support relationship to a support force or to another FA unit. Tactical missions do not affect the organizational structure, or the command relationship that results from that structure. These missions are assigned by a force commander on the advice of his FA

commander in his role as the FSCOORD. Tactical missions for field artillery are common to the quadripartite and North Atlantic Treaty Organization (NATO) communities. Tactical missions are normally assigned only to battalion-size or larger units. There are seven specific responsibilities inherent in each mission (Table 1). These seven responsibilities determine--

- The FA unit's priority in answering calls for fire.
- The FA unit's zone of fire.
- The FA unit's degree of responsibility in furnishing a fire support team.
- The FA unit's responsibility in furnishing a liaison officer.
- With whom the FA must establish communications.
- Who positions the FA unit.
- Who plans the FA unit's fires.

TABLE 1. INHERENT RESPONSIBILITIES OF FIELD ARTILLERY MISSIONS

AN FA UNIT WITH A MISSION OF —	DIRECT SUPPORT	REINFORCING	GENERAL SUPPORT REINFORCING	GENERAL SUPPORT
1. Answers Calls for Fire in Priority From —	1. Supported unit 2. Own observers[1] 3. Force FA HQ	1. Reinforced FA 2. Own Observers[1] 3. Force FA HQ	1. Force FA HQ 2. Reinforced unit 3. Own observers[1]	1. Force FA HQ 2. Own observers[1]
2. Has as its Zone of Fire —	Zone of action of supported unit	Zone of fire of reinforced FA	Zone of action of supported unit to include zone of fire of reinforced FA unit	Zone of action of supported unit
3. Furnishes Fire Support Team (FIST/FSS)[2]	Provides temporary replacements for casualty losses as required	No requirement	No requirement	No requirement
4. Furnishes Liaison Officer —	No requirement	To reinforced FA unit HQ	To reinforced FA unit HQ	No requirement
5. Establishes Communications With —	FIST chiefs, FSOs, and supported maneuver unit HQ	Reinforced FA unit HQ	Reinforced FA unit HQ	No requirement
6. Is Positioned by —	DS FA unit commander or as ordered by force FA HQ	Reinforced FA unit or as ordered by force FA HQ	Force FA HQ or reinforced FA unit if approved by force FA HQ	Force FA HQ
7. Has its Fires Planned by —	Develops own fire plans	Reinforced FA unit FA HQ	Force FA HQ	Force FA HQ

[1] Includes all target acquisition means not deployed with supported unit (radar, aerial observers, survey parties, etc.).

[2] A fire support section (FSS) for each maneuver brigade/battalion/cavalry squadron and one FIST with each maneuver company/ground cavalry troop are trained and deployed by the FA unit authorized these assets by TOE. After deployment, FISTs and FSSs remain with the supported maneuver unit throughout the conflict.

Direct Support (DS)

An FA unit assigned the mission of direct support is immediately responsive to the FA support needs of a particular maneuver element, normally a brigade. The DS unit furnishes close and continuous fires to the supported maneuver force. It must coordinate its fires with the battle plan of the supported force.

Direct support field artillery is positioned to conform with the supported commander's plans. To achieve cohesiveness within the combined arms team, the same FA unit should habitually provide direct support of the same maneuver force. The essential feature of the DS mission is a one-on-one relationship between the supporting unit and the supported unit. From the standpoint of division control, the DS mission is the most decentralized of the four tactical missions. It is used most frequently to place an FA battalion in support of a maneuver brigade.

Reinforcing

Field artillery reinforces only other FA units. If a field artillery unit needs augmenting fires to meet the overall supported maneuver force, the reinforcing mission may be given to another FA unit. An FA unit can reinforce only one other FA unit, but a reinforced unit can receive reinforcement from more than one FA unit. The reinforcing mission allows a commander to increase FA support for subordinate units. This is done without relinquishing complete control of his FA assets and without imposing major logistical requirements of his DS field artillery. From a viewpoint of division control, the reinforcing, tactical mission is second only to the DS mission in its degree of decentralization.

General Support Reinforcing (GSR)

The GSR mission requires a field artillery unit to furnish supporting fires for the force as a whole as its first priority. Its second priority is to furnish reinforcing fires to another FA unit. A GSR unit remains under the tactical control of the force FA headquarters. It therefore responds on a first-priority basis to the needs of that headquarters. However, the inherent responsibilities of this mission dictate the establishment of liaison and communications with the reinforced FA unit. Because of this, a quick-fire channel (reinforced battalion command/fire [CF] direction [FM]) is established for immediate response to the reinforced FA unit's need. The GSR mission offers the force commander the flexibility to meet the needs of a variety of tactical situations. In terms of division control, the GSR mission is the second most centralized mission.

General Support

An FA unit assigned a mission of general support provides FA support for the force FA headquarters. The GS mission provides field artillery immediately responsive to the needs of the force commander. An FA unit with a GS mission may not be effective in attacking some targets of opportunity. There is no direct communications link with the fire support Team (FIST) at company level. It is most effective against planned targets. From a division commander's viewpoint, the GS mission is the most centralized of the four standard tactical missions.

ALLIED TACTICAL MISSIONS

When conducting operations with the American, British, Canadian, and Australian (ABCA) and NATO alliances, the US Army must be familiar with the FA tactical missions of its allies. Learning event 3 of this lesson contains tables which more fully describe allied tactical missions.

NONSTANDARD TACTICAL MISSIONS

When a commander's intent cannot be conveyed with a standard tactical mission, a nonstandard tactical mission may be assigned. This is done either by issuing a mission statement, along with explicit instructions on each of the seven inherent responsibilities or by assigning a standard tactical mission and explaining how it has been changed. The following examples illustrate the latter:

- 1-50 FA: DS 1st Bde; division artillery will plan 1-50 FA fires for division preparation.

- 1-60 FA: GSR 1-20 FA; do not exceed 50 percent of controlled supply rate to R 1-20 FA.

- 1-70 FA: GS; provide liaison officer to division artillery TOC.

You have just covered the area of inherent responsibilities and relationships of FA units assigned to the four standard tactical missions. In the next learning event, you will learn about the characteristics and circumstances for nonstandard, allied, and on-order missions.

Learning Event 3: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE CHARACTERISTICS AND CIRCUMSTANCES FOR NONSTANDARD, ALLIED, AND ON-ORDER MISSIONS AND THE INHERENT RESPONSIBILITIES AND RELATIONSHIPS OF FIELD ARTILLERY UNITS ASSIGNED EACH OF THESE MISSIONS.

During this learning event, you will learn the tactical tasks, control, and responsibilities of the field artillery while fighting beside allied and NATO forces. Tables 2 and 3, will help you to understand the tasks and responsibilities of the FA in allied tactical missions. Table 2 shows these responsibilities as they apply when conducting operations within the American, British, Canadian, Australian alliance. Table 3 shows these responsibilities as they apply to NATO alliance operations.

TABLE 2. TACTICAL TASKS AND RESPONSIBILITIES FOR ARTILLERY (ABCA)

TABLE 2. TACTICAL TASKS AND RESPONSIBILITIES FOR ARTILLERY (ABCA).

ARTILLERY WITH A TACTICAL TASK OF	ANSWERS CALLS FOR FIRE IN PRIORITY FROM	ESTABLISHES LIAISON WITH	ESTABLISHES COMMUNICATION WITH	FURNISHES FORWARD OBSERVERS TO[1]	HAS AS ITS ZONE OF FIRE	HAS ITS FIRES PLANNED BY	NATION(S) TO WHICH TERMINOLOGY APPLIES
Direct Support	1. Directly supported formation/unit 2. Own observers 3. Force field artillery [2]	Directly supported formation/unit (battalion, regiment, or brigade)	Directly supported maneuver formation/unit	Each maneuver company of the directly supported formation/unit	Zone of action of the directly supported formation/unit	Develops own fire plans in coordination with directly supported formation/unit	US
	1. Directly supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	Directly supported formation/unit	Directly supported formation/unit	Directly supported formation/unit	Zone of action of the directly supported formation/unit or as ordered by higher artillery HQ	Artillery formation unit in direct support in conjunction with directly supported formation/unit	UK – CA – AS
In Support	1. Supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Zone of action of the supported formation/unit or as ordered by higher artillery HQ	Next higher artillery HQ	UK – CA – AS
At Priority Call	1. Formation/unit to which placed at priority call 2. Any other supported formation/unit 3. Any other formatin/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement	Zone of action of the formation/unit to which placed at priority call or as ordered by higher artillery HQ	Formation/unit to which placed at priority call	UK – CA – AS
General Support	1. Force Field artillery HQ[2] and target acquisition artillery 2. Own observers	No inherent requirement	No inherent requirement	No inherent requirement	Zone of action of the supported formation/unit or zone prescribed	Force field artillery HQ[2]	US
General Support Reinforcing	1. Force Field artillery HQ[2] 2. Reinforced artillery unit 3. Own observers	Reinforced field artillery unit	Reinforced field artillery unit	Reinforced field artillery unit if approved by force field artillery HQ.[1 2] Applies also to the provision of liaison officers	Zone of action of the supported formation/unit to include zone of fire of the reinforced artillery unit	Force field artillery HQ[2] or as otherwise specified	US – AS
Reinforcing	1. Reinforced artillery unit 2. Own observers 3. Force field artillery HQ[2]	Reinforced field artillery unit	Reinforced field artillery unit HQ	Reinforced field artillery unit. Applies also to the provision of liaison officers	Zone of fire of reinforced artillery unit or zone prescribed	Reinforced artillery unit	US

[1] The US will not furnish forward observers but will furnish fire support teams (on request)

[2] Force artillery headquarters or higher artillery headquarters

LEGEND:
AS = Australia
CA = Canada
UK = United Kingdom
US = United States

TABLE 3. TACTICAL TASKS AND RESPONSIBILITIES FOR CONTROL OF ARTILLERY (NATO)

ARTILLERY WITH A TACTICAL TASK OF	ANSWERS CALLS FOR FIRE IN PRIORITY FROM	ESTABLISHES LIAISON WITH	ESTABLISHES COMMUNICATION WITH	FURNISHES FORWARD OBSERVERS TO[1]
Direct Support	1. Directly supported formation/unit 2. Own observers 3. Force field artillery [2]	Directly supported formation/unit (battalion, regiment, or brigade)	Directly supported maneuver formation/unit	Each maneuver company of the directly supported formation/unit
	1. Directly supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	Directly supported formation/unit	Directly supported formation/unit	Directly supported formation/unit
In Support	1. Supported formation/unit 2. Any other formation/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement
At Priority Call	1. Formation/unit to which placed at priority call 2. Any other supported formation/unit 3. Any other formatin/unit as authorized by the controlling HQ	No inherent requirement	No inherent requirement	No inherent requirement
General Support	1. Force Field artillery HQ[2] and target acqui-sition artillery 2. Own oberservers	No inherent requirement	No inherent requirement	No inherent requirement
General Support Reinforcing	1. Force Field artillery HQ[2] 2. Reinforced artillery unit 3. Own observers	Reinforced field artillery unit	Reinforced field artillery unit	Reinforced artillery unit if approved by force field artillery HQ[1, 3]
Reinforcing	1. Reinforced artillery unit 2. Own observers 3. Force field artillery HQ[2]	Reinforced field artillery unit	Reinforced field artillery unit HQ	Reinforced field artillery unit[3]
Reinforcing by Fire (Mutual Support)	1. Supported formation/unit and own observers 2. Force field artillery HQ	Supported formation/unit and reinforcing artillery unit	Supported formation/unit and reinforcing artillery unit	No inherent requirement

[1]The US will not furnish forward observers but will furnish fire support teams (on request)
[2]Force artillery headquarters or higher artillery headquarters
[3]Applies also to the provision of liaison officers

TABLE 3A. TACTICAL TASKS AND RESPONSIBILITIES FOR CONTROL OF ARTILLERY (NATO)

ARTILLERY WITH A TACTICAL TASK OF	WEAPONS MOVED AND DEPLOYED BY (POSITIONED BY)	HAS AS ITS ZONE OF FIRE	HAS ITS FIRES PLANNED BY	NATION(S) TO WHICH TERMINOLOGY APPLIES
Direct Support	Direct support artillery unit comander or as ordered by force field artillery HQ [2]	Zone of action of the directly supported formation/unit	Develops own fire plans in coordination with directly supported formation/unit	BE, DA, FR, GE, NL, TU US, IT
	Next higher artillery HQ	Zone of action of the directly supported formation/unit or as ordered by higher artillery HQ	Artillery formation/unit in direct support in conjuntion with directly supported formation/unit	CA, NO, UK
In Support	Next higher artillery HQ	Zone of action of the supported formation/unit or as ordered by higher artillery HQ	Next higher artillery HQ	CA, UK
At Priority Call	Next higher artillery HQ	Zone of action of the formation/unit to which placed at priority call or as ordered by higher atillery HQ	Formation/unit to which placed at priority call	CA
General Support	Force field artillery HQ [2]	Zone of action of the formation/unit or zone prescribed	Force field artillery HQ [2]	BE, DA, FR, GE, NL, NO, TU, US, IT
General Support Reinforcing	Force field artillery HQ or reinforced artillery unit if approved by force field artillery HQ [2]	Zone of action of the supported formation/unit to include zone of fire of the reinforced artillery unit	Force field artillery HQ [2] or as otherwise specified	BE, DA, FR, IT, NL, TU, US
Reinforcing	Reinforced artillery unit or as ordered by force field artillery HQ [2]	Zone of fire of reinforced artillery unit or zone prescribed	Reinforced artillery unit	BE, DA, FR, IT, GE, NL, NO, TU, US
Reinforcing by Fire (Mutual Support)	Unit commanding officer or as ordered by force artillery HQ [2]	Zone of supported formation/unit or zone prescribed by force artillery HQ [2]	Own FDC and reinforced artillery unit	FR

LEGEND:

BE	= Belgium	IT	= Italy
DA	= Denmark	NL	= Netherlands
FR	= France	NO	= Norway
GE	= Germany	TU	= Turkey

MISSION CHANGES

The following example shows the procedures for issuing a mission when some of the seven inherent responsibilities change:

- 1-80 FA: Augment the fires of 1-10 FA.

  - Answer calls for fire in priority from 1-10 FA, 3-4 Cav, and division artillery.

  - Zone of fire is to be assigned by division artillery.

  - There is no FIST requirement.

  - Establish liaison with 1-10 FA.

  - Establish communications with 1-10 FA and 3-4 Cav.

- 1-10 FA will position (division artillery approval required).
- Division artillery will plan fires.

If the division commander needs to retain control of all his fire support assets for specific times to attack second-echelon forces and or to perform counterfire, nonstandard missions must be assigned.

On-Order Missions

An on-order mission allows an FA unit to anticipate and plan an orderly transition from the current mission or status to a new mission or status. It is based on the single event that is most likely to occur. It also allows the unit to receive on-order fires to incorporate future fire support into its planning. An example of an on-order mission is: 1-50 FA: GSR 1-40 FA; on-order, DS 1st Bde.

This on-order tactical mission (DS 1st Bde) tells the commander of the 1-50 FA that he will be notified when he is to perform the DS mission. He will now make plans and take preparatory actions to make the transition quickly and smoothly. For example, he would probably establish communications and liaison with the 1st Brigade early.

CONCLUSION

In this lesson, you have learned about the field artillery fire support systems organic to the five types of US Army divisions. You have also been shown the four standard tactical missions and the inherent responsibilities of the artillery units assigned each mission. You now have an overview of the characteristics and circumstances when fighting alongside allied soldiers. When you understand the structure of the supporting elements, branches of service, and allied soldiers, you know what to expect and how to plan to use all these assets effectively.

LESSON 1
PRACTICE EXERCISE

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

SITUATION

As a maneuver commander, your unit is, at times, supported by several different fire support units. You should know what these units have available, so you know what type of fire support to expect.

1. You are a maneuver commander working with the fire support officer in planning fire support for your next operation. Your support comes from an armored/mechanized infantry division which

   ○ A. has three 105-mm towed cannon battalions.

   B. has aviation/target acquisition battery.

   C. has a separate MLRS battery.

   D. has three 203-mm MLRS batteries.

2. You are a maneuver commander planning fire support with the FSO. Your support comes from an airborne division artillery. You can expect support

   A. from a 105-mm towed cannon battery.

   B. of a target acquisition battery.

   C. with a 155-mm towed cannon battery.

   D. of a 203-mm/MLRS battery.

SITUATION

You are a maneuver commander with several new commanders and a new assistant S3. You are teaching them about the planning of fire support for their maneuver elements. They must also understand the inherent responsibilities of field artillery missions. You require them to correctly match the following:

3. Answers calls for fire in priority from reinforced unit.

TYPES OF SUPPORT

A. Direct support.
B. Reinforcing.
C. General support reinforcing.
D. General support.

4. Establishes zone of action of supported unit.

TYPES OF SUPPORT

A. Direct support.
B. Reinforcing.
C. General support reinforcing.
D. General support.

5. Provides temporary replacements for casualty losses, as required.

TYPES OF SUPPORT

A. Direct support.
B. Reinforcing.
C. General support reinforcing.
D. General support.

6. Establishes communications with reinforced FA unit HQ.

TYPES OF SUPPORT

A. Direct support.
B. Reinforcing.
C. General support reinforcing.
D. General support.

SITUATION

As the S3 of a maneuver battalion, you are training a new assistant S3. You will tell him he must understand the tactical tasks and esponsibilities for control of artillery with American, British, Canadian, Australian (ABCA), and NATO forces.

(Questions 7 and 8 apply to ABCA forces).

7. Artillery with a tactical task of direct support has as its zone of fire

    A. the zone of action of the directly supported formation/unit.

    B. the zone of action of reinforced artillery unit or zone prescribed.

    C. the zone of action of the supported formation/unit or zone prescribed.

    D. the zone of action of the supported formation to include zone of fire of the reinforcing artillery unit.

8. Artillery with a tactical task of general support reinforcing

    A. has its fires planned by formation/unit to which placed a priority call.

    B. has its fires planned by the next higher artillery headquarters.

    C. plans its own fires in coordination with the unit supported.

    D. has its own fires planned by force field artillery HQ or as otherwise specified.

(Questions 9 and 10 apply to NATO forces.)

9. The Canadian artillery units assigned to corps have the responsibility of providing tactical general support for your unit during maneuvers. You must review the operations order from your headquarters to ensure that the units

    A. have their fires planned by the next higher artillery HQ.

    B. plan own fires in coordination with the supported unit.

    C. have their fires planned by the force field artillery HQ.

    D. have their fires planned by own FDC and reinforced artillery unit.

10. In the deployment of artillery in the supporting role of your unit, you must ensure that it is moved or employed by the

    A. next higher artillery HQs.

    B. force field artillery HQs.

    C. unit commanding officer.

    D. reinforced artillery unit.

LESSON 2

NON-FIELD ARTILLERY SOURCES OF FIRE SUPPORT

TASK

Identify non-field artillery sources of fire support, their characteristics, capabilities and limitations, and considerations in planning their employment.

CONDITION

Given the subcourse material for this lesson, a training scenario and extracts, as applicable, the student will complete the practice exercise at the end of this lesson.

STANDARD

The student will demonstrate his comprehension and knowledge of the task by identifying non-field artillery sources of fire support, their characteristics, capabilities and limitations, and considerations in planning their employment.

REFERENCE

FM 6-20

GENERAL

During this lesson, you will learn about fire support from sources other than field artillery. In preparation for battle, you may have at your disposal attack helicopters, naval gunfire ships, Air Force jets, and mortars attached to your maneuver elements. You must learn the capabilities and limitations of all the systems which may be supporting you. When used as fire support, these systems may provide representatives to the supported unit's fire support element (FSE) to ensure that the efforts of each system are coordinated with the other fire support systems.

Learning Event 1: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE CHARACTERISTICS, CAPABILITIES AND LIMITATIONS, AND EMPLOYMENT CONSIDERATIONS FOR 60-MM, 81-MM AND 107-MM MORTARS.

EMPLOYMENT OF OTHER FIRE SUPPORT MEANS

In addition to field artillery, other weapons systems can be used to provide fire support for the maneuver commander.

This learning event will discuss the use of one of these other weapons systems: the employment of mortars.

MORTARS

Mortars are the indirect fire weapons of the maneuver units. Although mortars are controlled by maneuver elements, the fire support officer and the battalion fire support officer are normally responsible for integrating them into the overall fire support plan.

Description

Mortar fires and munitions are employed in accordance with overall fire support needs and the battalion action. Mortars are lightweight. They can be positioned and fired with minimum expenditure of time and effort. They are effective against targets without armor protection.

Usefulness

Mortars are most useful in neutralization of dismounted units and in suppression, obscuration, and illumination roles. Because of their high-angle trajectories, mortars are excellent for attacks on targets in defilade or on the reverse slopes of hills.

Employment Consideration

The decision to employ mortars depends, in part, on the characteristics of the weapon and its ammunition. These characteristics are shown in Table 4.

TABLE 4. MORTAR WEAPON/AMMUNITION CHARACTERISTICS

MORTAR	RANGE (METERS) MINIMUM	RANGE (METERS) MAXIMUM	AMMUNITION	TERMINAL EFFECTS RADII (METERS)	RATE OF FIRE	BASIS OF ISSUE H-EDITION TOE	BASIS OF ISSUE J-EDITION TOE
60-mm With Baseplate Handheld With Baseplate Handheld With Baseplate Handheld	75 75 75 75 75 75	3,500 1,300 1,629 1,200 931 800	HE M720 WP M302A1 Illum M83A3	27.5	30 rounds per minute (rd/min) for 4 minutes; 20rd/min sustained	2 per ranger company	2 per ranger company
81-mm	73 72 72 72 100	4,789 4,737 4,737 4,737 3,150	HE M374A3 HE M374 HE M374A2 WP M375A2 Illum M301A3	34 34	30 rd/min for 1 minute; 25rd/min for 2 minutes 8 rd/min sustained	3 per inf and mech inf company (except for air assault (AASLT) company); 4 per AASLT bn	2 per inf company including airborne (abn) and AASLT
107-mm	770 920 870 920 400 1,540	6,840 5,650 5,420 5,650 5,490 5,650 6,840	HE M329A2 HE M329A1 HE M329 WP M328A1 Illum M335A2 Chem (CS) M630 GAMP[2]	—[1] 40 by 20 40 by 20 1,500	18 rd/min for 1 minute; 9 rd/min for 5 minutes; 3 rd/min sustained	4 per bn all inf, mech inf, and armor; 3 per cav troop	6 per armor and mech inf bn; 4 per inf bn (including abn and AASLT); 3 per cav troop

[1]Classified.
[2]Guided anitarmor mortar projectile.

Some of the considerations for the employment of mortars are as follows:

- Mortar positions are seldom surveyed in. Rounds fired in adjustment result in loss of surprise and greater ammunition expenditures.
- The high-trajectory projectile is more easily detected by radar. It is also adversely affected by strong winds that degrade accuracy.
- The high rate of fire required for firing illumination missions and smoke screens is a limitation when ammunition availability is considered. Maneuver units can carry only a limited amount of ammunition. Resupply may be difficult, especially in the covering force.

NOTE: The fielding of the M23 mortar ballistic computer in FY85 has increased the responsiveness and accuracy of all mortars. The M23 interfaces with the digital message devise (DMD) and tactical fire (TACFIRE) direction system to bring mortars into the TACFIRE net.

You have now learned about the characteristics of mortars and their employment considerations. You are ready to examine another type of non-field artillery support system: air support and fire support coordination in air operations.

Learning Event 2: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE COMPONENTS, CHARACTERISTICS, CAPABILITIES, AND LIMITATIONS OF AIR SUPPORT, AND THE ROLE OF THE FIRE SUPPORT COORDINATOR (FSCOORD) IN AIR SUPPORT OPERATIONS.

Tactical air support comes from several different sources. Each branch of the service has some tactical aircraft. You can also receive assistance from allied and NATO forces. You must learn how each of these forces can play a role in fighting Threat forces with your elements.

AIR SUPPORT

Air support in the AirLand Battle is that support provided primarily by the Air Force, Navy, and Marine air squadrons. It consists of close air support (CAS), counterair, air interdiction, battlefield air interdiction (BAI), tactical surveillance and reconnaissance (TSR), and tactical airlift (Figure 5). The FSCOORD is primarily concerned with CAS, BAI, and TSR.

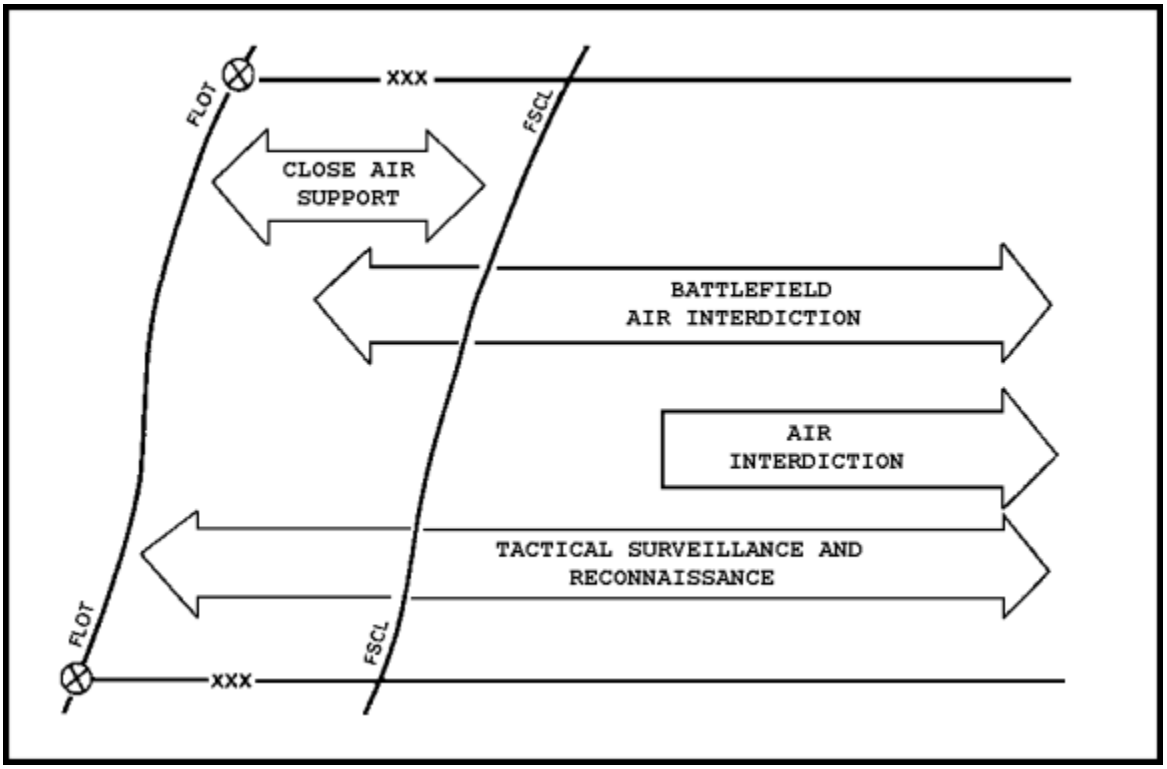


FIGURE 5. TYPES OF TACTICAL SUPPORT

Close Air Support

CAS is air action against hostile targets close to friendly forces. Each air mission requires detailed integration with the fire and movement of those forces. This means that the aircraft are under positive or procedural control.

Battlefield Air Interdiction (BAI)

BAI is air action against hostile surface targets that are in a position to directly affect friendly forces. These missions require joint planning and coordination. However, they may not require continuous coordination during the execution stage. Those air strikes short of the fire support coordination line (FSCL) must be coordinated with the FSCOORD.

Tactical Surveillance and Reconnaissance (TSR)

TSR operations provide timely information from visually observed and or sensor recorded sources. These operations also provide poststrike photo coverage and meteorological, hydrographic, and geographic data. That portion of TSR that supports the land commander's information needs is identified as tactical air reconnaissance (TAR). The FSCOORD uses targets derived from this source of air support.

Air Interdiction

Although not a part of close air support, air interdiction will play an important role by influencing actions in the deep battle. Air interdiction is that air operation conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces. It is conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is usually not required.

Air-Ground Operations System

The responsibility for conducting air-ground operations is shared equally by the Air Force and Army commanders. The Army and Air Force have parallel communications systems for coordinating tactical air support with ground operations. The air-ground operations system (AGOS) includes the personnel, equipment, procedures, and techniques composing the Army air-ground systems (AAGS) and the Air Force tactical control system (TACS). The air-ground operations system provides the means to initiate, receive, process, and execute requests for air support. It also provides the means to disseminate combat information and intelligence obtained by the Air Force.

While Army air support operations are habitually associated with the Air Force, there may be times when Navy, Marines, or allied air support is available to support ground operations. When Marine or Navy air support is available, a Marine tactical control party (TACP) will be provided at battalion through division levels from the air and naval gunfire liaison company. The use of allied air support may require liaison representatives and communications from the allied air force.

FSCOORD Responsibilities in Air Support Operations

The types of air fire support with which a FSCOORD is most often involved are close air support and battlefield interdiction.

The FSCOORD at each echelon has the following responsibilities:

- Review all requests for fire support from subordinate units.
- Evaluate air support requires in light of other requirements.

- Make decisions within delegated authority to furnish requested support, substitute other types of support, or disapprove the request.

When considering air support requests as one portion of the total fire support, the FSCOORD works closely with the S3/G3 air and the air liaison officer (ALO) at each force level. In this capacity, the FSCOORD has the following responsibilities:

- Provide planning information on air support to the assistant G3 air for the development of allocation recommendations.
- Review the distribution of air support resources, and recommend redistribution.
- Monitor the execution of all fire support missions to determine the adequacy of mission accomplishment; and coordinate poststrike damage assessment with the TACP and the G2.
- Coordinate with the air management element (AME), the TACP, and the assistant G3 air on fire support requirements for the use of airspace, and keep all elements informed on the status of planned, special ammunition fires.
- Recommend targets for attack by air-delivered special ammunition fires, and recommend air interdiction targets.

CAPABILITIES AND LIMITATIONS

To take effective advantage of tactical air support, it is important to understand both its capabilities and its limitations.

Capabilities

Tactical air forces provide their most effective fire support when maximum advantage is taken of their inherent strengths. Fire planners at all levels should exploit these strengths.

High Speed and Long Range. A joint force commander can shift the mass of tactical air firepower from sector to sector on a theaterwide battlefield on short notice. The range (extended by air refueling) and speed of modern BAI and CAS aircraft, coupled with centralized control, allow the joint force commander to focus tactical air firepower in support of land commanders who have the most urgent need for fire support.

Versatility. Tactical air forces provide support with a variety of weapons optimized for a broad range of targets. Every target on today's battlefield is vulnerable to tactical air firepower. Air strikes are particularly effective against hard and mobile targets and for interdiction of deep targets and second-echelon forces beyond the range of surface-to-surface fire support assets.

Delivery Accuracy. Because of the variety of delivery techniques available and the guidance systems built into some air-delivered ordnance, first-hit probabilities are high. Strafing, for example, can now be used 25 meters from protected friendly troops.

Air-Ground Communications. Land and air components provide communications support for the air-ground operations system. Army and Air Force communications systems are parallel from battalion to corps.

Limitations

Although air firepower can solve many battle problems for a supported land force commander, its use is subject to certain constraints. The FSCOORD must consider these limitations:

Availability of Aircraft. There will seldom be enough aircraft to meet all requests for air firepower support. Consequently, maneuver commanders and fire planners must ensure that firepower is massed at the most critical target areas on the battlefield and at the most decisive times. Close in (CAS) and deeper (BAI) targets may require simultaneous execution.

Delivery Restrictions Imposed by Night and Weather. Tactical air force target acquisition and computed weapon release systems allow 24-hour all-weather ordnance delivery. However, the optimum weapon for a certain target may not be usable under all battle conditions.

Delivery Restrictions Imposed by Air Defenses. When faced with an intense array of surface-to-air missiles and antiaircraft artillery, air support aircraft have two options:

- Deliver ordnance optimized for increased standoff ranges. This option precludes the use of certain short-range munitions.
- Use low-altitude penetration tactics and attack targets from a pop-up maneuver. In many situations, aircraft will require suppression of enemy air defense (SEAD) fires from ground weapon systems and or from Army aircraft. They will require these fires to protect them from enemy air defense fires.

Time on Station and Delayed Response. Primary air support aircraft have varying capabilities to loiter on station. This must be taken into account in planning the use of these aircraft. That limitation is especially important for immediate air strikes; this is because the aircraft used to execute them may have been scrambled or diverted from other missions.

EMPLOYMENT CONSIDERATIONS

The successful air strike begins with a well-coordinated plan. A general outline of the plan should be formulated before an air request is submitted. Preferably this will occur during the planning states of the maneuver operation itself. The details are confirmed or filled in as the situation develops. The request for air support contains the elements necessary for Army decisions, Air Force selection of aircraft and ordnance, and initial aircrew briefings.

The strike pilots are briefed on the final details of the plan after direct radio contact is established and before they are committed to the first attack.

Air support primarily provides destructive or neutralizing fire as opposed to suppressive fire. It achieves this by concentrating a great amount of firepower on small targets within a short time.

Effective results can be obtained by isolating critical elements within the target area and attacking them as point targets. However, the use of cluster munitions makes possible the effective attack of large area targets. The short time span during which the destructive power is applied contributes to a shock effect. Both destruction and shock effects can be exploited by the maneuver force.

An air strike can suppress or neutralize as well as destroy and, by its presence alone, can often inhibit enemy movement.

Determining Target Suitability

In determining target suitability for air attack, several factors must be considered.

Capabilities of Organic Weapons. Organic and supporting weapons are considered before air support is requested. This does not mean that organic fires should always be used before air is requested. However, the principle of using the lowest echelon as a means of fire support must always be applied.

Target Identification From the Air. Air support users must ensure that the pilot can identify the target. If possible, the maneuver or fire support unit should pinpoint it for him by using marking rounds or precise grid coordinates.

Aircraft Armament Capabilities. Aircraft armament must achieve the desired results. This is particularly important when diversion of strike flights already airborne is considered.

Fleeting Nature of Some Targets. Air support is not requested unless the target will remain a target long enough to be attacked by air means. (Some targets disperse before they can be attacked.)

Using a Forward Air Controller to Control the Strike. If the FAC is on the ground, it may be difficult for him to direct deep air strikes because of visibility limitations. If he is airborne, he may have trouble with air defense fires. If no FAC is available, the FSO, senior fire support sergeant, or other qualified FIST members may direct a CAS strike in an emergency.

Air Support Density. There are seldom enough aircraft to strike all suitable targets. Commanders and FSCOORDs must judiciously prioritize air support requests.

Proximity of Friendly Forces to the Target. Some types of ordnance cannot be used as close to friendly ground forces as others. For example, general purpose bomb effects are more predictable than are those from cluster bomb units.

Intensity of Antiaircraft Defense. In general, a high air defense intensity level dictates greater slant range for weapons release and increased need for suppressing enemy air defenses (SEAD fires). This dictates ordnance suitable for delivery at higher dive angles and longer ranges from the targets.

Weather. The optimum ordnance for a particular target may not be deliverable under a low ceiling.

STRIKE EXECUTION

To accomplish an air strike, aircrews must have, as a minimum, target and friendly position identification and clearance to expend ordnance.

Target Identification

Generally, if the strike pilot can see the target, he can hit it. The target must be identified as accurately as possible. The supported ground unit must send the target location to the forward air controller, who sends it to the strike flight. An airborne forward air controller (FAC) can mark the target with smoke rockets or grenades, or can call for a mark from the ground unit. FISTs and observation/lasing (O/L) teams may be required to designate targets for attack by air-delivered laser-guided bombs.

In the absence of an airborne FAC, a mark from the ground is usually necessary. Ground reference marks may include geographical features, smoke rounds from field artillery or mortars, ordnance currently impacting in the target area, illumination rounds for night strikes, tracer fire, and other ground fires near the target.

Friendly Position Identification

The location of the unit nearest to the target is most important. Also, other units likely to be overflown in the attack pattern should be considered.

Tactical Security

For tactical security, it is best to identify friendly positions by radio transmission between the pilot and the FAC or FSO. Friendly positions may be marked by smoke grenades, flares, fires, signal mirrors, panels, balloons, strobe lights, vehicle lights, and radar beacons. These procedures are dangerous in that they provide the same information to both the enemy and the pilot.

Impact Adjustment

In the absence of a FAC, and in an emergency, ground personnel (usually the FSO) may direct strike flights onto targets. Correction to the target must be simple, clearly understood, and fast. Cardinal directions are preferred over clock references of attack heading corrections. The observer-target method of correcting artillery or mortar fires could be dangerously confusing in a fast-moving air strike.

For example, a forward air controller may tell a pilot to place the next burst "THREE HUNDRED METERS NORTH OF THE PREVIOUS ROUND," rather than "RIGHT 300." Fighters should not be directed to strike between a target mark and friendly positions unless those positions are clearly visible to the strike pilots and the munitions separation distance is not a factor.

You have just covered fire support coordination dealing with air support. In the next learning event, you will become familiar with factors concerning the attack helicopters.

Learning Event 3: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE CHARACTERISTICS, CAPABILITIES AND LIMITATIONS, AND EMPLOYMENT CONSIDERATIONS FOR ATTACK HELICOPTERS.

The attack helicopter is a tank killer. It is in all Army divisions. Although it is primarily a maneuver weapon, the attack helicopter can mount an impressive array of weapons. It can also be used as a fire support means similar to air support aircraft.

ATTACK HELICOPTERS

Attack helicopters are limited by a combination of fuel capacity and flight time. Other factors to be considered are weather and visibility restrictions, and the air defense environment. Their full effectiveness is achieved as an aerial maneuver unit by platoon, by company, and by battalion.

Mobility and Capability

Their mobility and capability to maneuver quickly and mass fires in any type of terrain makes attack helicopters an especially capable target attack means. They provide a heavy volume of fire in either a

terrain or a tactical situation that limits effective and economical use of field artillery, mortars, air support, and naval gunfire.

Attack helicopter pilots may acquire targets visually. Preferably, targets are acquired and "handed off" to them by aerial scouts, by ground or aerial observers, or by other target acquisition means.

Targets for Attack

The type of targets for attack should be carefully specified. The attack helicopter (AH) has a wide variety of ordnance. Knowing the type of target ensures the ordnance mix best suited to match the target. The objective of AH employment is to put the aircraft on station at the right time with the right munition. This must be well coordinated, since AH loiter time is short, and the enemy's air defense array is lethal.

Scheduled or on-call FA fires may be required to suppress enemy air defense (SEAD) fires for the attack and to cover AH withdrawal after the mission. When attack helicopters are employed, continuous coordination is required to ensure that field artillery and other indirect fires can also continue simultaneously.

Weapons Capabilities

The munition range, quantity and type of target attacked descriptions are given in Tables 5 and 6, as follows:

TABLE 5. AH-1 WEAPONS CAPABILITIES

SUBSYSTEM	MAXIMUM EFFECTIVE RANGE (METERS)	MAXIMUM LOAD[1]	TARGETS
2.75 inch Folding-Fin Aerial Rocket (FFAR)	5,400	76 (10-lb rockets) 62 (17-lb rockets)	Troops,[2] trucks or lightly armored vehicles[3] enemy air defense[3]
7.62-mm Minigun	1,100 (tracer burnout 900 meters)	4,000	Troops,[2] trucks or lightly armored vehicles[3]
40-mm Grenade	1,600	265	Troops,[2] trucks or lightly armored vehicles[3]
20-mm Cannon (Armor Piercing Incendiary Round)	1,500	750	Trucks or lightly armored vehicles[3]
TOW[4]	3,750	8 missiles	Tanks and other hard targets[3]

[1] The actual load depends on the mission, enemy situation, type attack helicopter, and atmospheric conditions.
[2] Area targets.
[3] Point targets.
[4] Minium range of 500 meters. Time of flight for the missile at maximum range is 22 seconds (excluding unmasking and acquisition time).

TABLE 6. AH-64 WEAPONS CAPABILITIES

SUBSYSTEM	MAXIMUM EFFECTIVE RANGE (METERS)	MAXIMUM LOAD[2]	TARGETS
2.75-Inch FFAR	6,000	76 (10-or 17-lb rockets)	Troops,[3] trucks or lightly armored vehicles,[4] enemy air defense[4]
30-mm Cannon Dual-Pupose (Armor-Piercing/HE)	3,000	1,200	Troops,[3] trucks or lightly armored vehicles,[4]
HELLFIRE Modular Missile System	—[5]	16	Tanks and other hard targets[4]

[1] The AH-64 is equipped with the pilot night vision sensor to enhance flight during periods of reduced visibility and a target acquisition sight/designator to lase targets for laser energy seeking munitions.
[2] The actual load depends on the mission, enemy situation, and atmospheric conditions.
[3] Area Targets.
[4] Point Targets.
[5] Classified.

Munition Mixes

Not all the weapons shown in the tables can be carried at one time on one helicopter. Also, the loads listed represent the maximum for each type of ordnance. If two or more types of ammunition are desired, trade-offs must be made and less of each type of ammunition will be carried. When employment of attack helicopters is anticipated, the types of targets to be engaged must be specified so that the proper ordnance will be loaded in the aircraft.

With the 2.75-inch rockets, helicopters are capable of both direct and indirect fire. However, in the indirect fire mode, direction is controlled by the on-board compass, which does not provide sufficient accuracy for precision gunnery. Therefore, attack helicopters are most effective when employed in the indirect fire mode by a fire team (platoon or company) against soft-area targets. The Cobra-mounted tube launched, optically tracked wire guided missile (TOW), however, is an excellent antitank weapon. Also, Cobras can be used to suppress other surface targets and to protect airlift helicopters.

You have just learned about the attack helicopters and their capabilities, characteristics, and employment considerations. You have seen how they can be used to supply direct and indirect fires. In the next learning event, you will learn about joint air attack team (JAAT) operations, and how the FSCOORD uses them in defensive and offensive operations.

Learning Event 4: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE COMPOSITION, EMPLOYMENT CONSIDERATIONS, AND FSCOORD CONSIDERATIONS FOR JOINT AIR ATTACK TEAM OPERATIONS.

A joint attack team is a combination of US Army scout and attack helicopters and the US Air Force CAS aircraft (normally A-10 Thunderbolts [Warthogs]).

JOINT AIR ATTACK TEAM

The JAAT operates with brigade-level and battalion-level Army ground maneuver forces, field artillery, mortars, and the air defense artillery weapons systems to attack priority targets.

Employment Considerations

A major element of a JAAT operation is the augmentation of indirect fire support. Fire support requirements for the attack team are generally the same as those for ground maneuver units.

The fire support element of the ground maneuver unit controlling the overall operation usually plans artillery fire support with the joint air attack team.

The following work together to ensure that adequate supporting fires are planned for the JAAT:

- Forward air controller (FAC).
- FSCOORD.
- Ground maneuver commander.
- S3.
- Attack helicopter liaison officer (AHLO).
- Air battle captain (ABC).

Fire support plans should be kept simple so that the air battle captain and forward air controller can be rapidly briefed. Since the briefing is normally done by radio, the interpretation of data can be difficult.

FSCOORD Considerations

The FSCOORD considerations in the employment of the JAAT are as follows:

- SEAD support for JAAT operations can be accomplished by planning a program(s) of targets.
- Attack helicopters, close air support, and indirect fire systems complement and reinforce each other when used together.
- Attack helicopters and CAS operate well below the trajectories of indirect fire systems.
- Aircraft should not overfly firing positions of indirect fire systems. They should stay at least 500 meters from impacting rounds.

Brigade FSOs and AHLOs can advise the TACP and flight leader on the best routes into and out of the battle area to avoid overflying field artillery positions.

Tables 7 and 8, as follows, indicate ways to employ CAS and artillery in the same target area.

TABLE 7. OPTIONS FOR PASSING FRIENDLY ARTILLERY INFORMATION TO CAS PILOTS

TECHNIQUE	DESCRIPTION	SIMPLICITY	COORDINATION EFFECTIVENESS
Grid Coordinates	Grid coordinates of friendly artillery points of impact are sent to the fighters by radio.	Very simple for FSO, but requires lengthy radio transmissions to fighters and map handling by pilots.	Satisfactory only if communications are secure and sufficient time is available for pilots to plot and read battle map.
Grid Line	Locations of friendly artillery points of impact in relation to a grid line are sent by radio; e.g., *ARTILLERY SOUTH OF 74 GRID LINE.*	Simple from all viewpoints. Does require map handling by pilots.	Same as grid coordinates.
Grid Square	Grid square containing friendly artillery points of impact sent by radio, e.g., *ARTILLERY IN GRID SQUARES 5878, 5879, AND 5880.*	Simpler than grid coordinates, but still requires lengthy radio transmissions and map handling by pilots.	Same as grid coordinates.
Clock on Geographic Feature	Locations of friendly artillery points of impact are described by radio. Points are located in relation to a prominent terrain feature with grid north understood as 12 o'clock; e.g., *ARTILLERY FROM BLUE LAKE, 12 TO 3 O'CLOCK, 1,800 METERS.*	Simple for FSO, FAC, and pilots who have trained properly.	Highly effective for FSO, FAC, and pilots who have trained properly.
Line on Geographic Feature (Informal ACA)	Locations of friendly artillery points of impact in relation to a line on a prominent terrain feature are sent by radio; e.g., *2 MILES WEST OF RED RIVER.*	Good.	Effective only if terrain feature is prominent from low altitude and separates CAS targets from artillery concentrations.
Real-Time Observation	FAC cautions fighter pilots that friendly artillery is impacting in the target area. Pilots visually determine and avoid the active impact points.	Good.	Effective, but pilots cannot plan attack until they are in immediate area. Best option when communications between FAC and FSO are limited.
White Phosphorus Round on Each Concentration	Same as real-time observation with a WP marking round fired periodically in each concentration.	Good.	Same as real-time observation.

TABLE 7A. OPTIONS FOR PASSING FRIENDLY ARTILLERY INFORMATION TO CAS PILOTS

TECHNIQUE	DESCRIPTIVENESS	SECURITY	MANAGEABILITY
Grid Coordinates	Exact description of situation from FSO viewpoint, but gives more information to pilots than they need.	Less than secure. There is limited capability for secure communications with inbound fighters from the ground.	Unsatisfactory from pilot's viewpoint. Difficult for pilot to read a battle map and maintain a "heads up" posture.
Grid Line	Less descriptive than a grid coordinate.	Like grid coordinates, less than secure. Also, would be a clear indication where artillery was not being fired.	Better than grid coordinates, but still requires pilots to handle a map.
Grid Square	Same as grid line.	Less than secure when secure communications are not available.	Unsatisfactory. Same as grid coordinates from pilot's viewpoint.
Clock on Geographic Feature	Excellent. Easily adapted to pass other target information to pilots.	Better than all above, but satisfactory only if terrain reference can be passed to pilots in a secure manner.	Good as long as system is understood before it is used.
Line on Geographic Feature (Informal ACA)	Good if terrain feature separates artillery concentrations from CAS targets.	Fair.	Good.
Real-Time Observation	Good, but may be difficult to separate from enemy artillery.	Good.	Good.
White Phosphorus Round on Each Concentration	Better than above, but is subject to the same limitations.	Fair.	Good.

TABLE 8. OPTIONS FOR SEPARATION OF CAS AND IMPACTING FIELD ARTILLERY ROUNDS

TABLE 8. OPTIONS FOR SEPARATION OF CAS AND IMPACTING FIELD ARTILLERY ROUNDS.

OPTION	DESCRIPTION	MAXIMUM FIREPOWER	CONTINUOUS PRESSURE	ADA SUPRESSION
Joint Attack	CAS, AH, and artillery attack same targets simultaneously. CAS uses real-time observation to see and avoid artillery danger areas.	Best for a limited number of targets attacked over a short period of time.	Excellent for a time-constrained attack. Could be poor if AH, fighters, and artillery all run short of ammunition before the target array is defeated.	Excellent
Separation by sector	Target array divided into sectors for attack by either artillery and AH or fighters and AH. No-fly/ no-fire sectors established by FSO/ALO.	Marginal for a limited target array in a time-constrained attack. Each separate part escapes the target defeat capability of either artillery or A-10s.	Good.	Unsatisfactory for sector not attacked by artillery.
Separation by Time	Key targets attacked by CAS for a given period of time; then targets attacked by artillery for a given period of time.	Fair. Firepower distributed across target array over a period of time. Could reduce amount of firepower delivered in a time-constrained attack.	Good.	Satisfactory if artillery is shifted away from ADA targets only for short periods. Close coordination is mandatory.
Separation by Altitude (ACA)	CAS, AH, and artillery engage same/close proximity targets simultaneously.	Excellent.	Good.	Excellent.
Check Fire[1]	All artillery that could affect CAS tactics check fire for duration of CAS attack.	Unsatisfactory. Indirect fires cannot be employed on targets not attacked by AH and CAS aircraft.	Unsatisfactory. Sections of the target array not attacked by AH or CAS would be free to operate without interference from indirect fire.	Unsatisfactory. Suppression of ADA would depend totally on direct fire weapons. Sections of the ADA target array could escape.

[1]Should not be considered except in extreme cases.

TABLE 8A. OPTIONS FOR SEPARATION OF CAS AND IMPACTING FIELD ARTILLERY ROUNDS

OPTION	FREEDOM OF CAS TACTICS	ADVERSE IMPACT ON ATTACK HELICOPTER OPERATIONS	COORDINATION SIMPLICITY	DISTRIBUTION OF AMMUNITION ON PRIORITY TARGETS
Joint Attack	Most impact. Tactics must be adjusted to artillery concentrations so that danger areas can be avoided.	None.	Can be carried out with limited communications between FAC, FSO, and fighters.	Poor if large target array is to be attacked for a long period of time.
Separation by Sector	Satisfactory as long as no-fly areas are well coordinated.	Significant for sectors without artillery fire.	Advance coordination between fighters and artillery units required.	Poor. Ammunition distributed by area instead of target priority and optimum attack system.
Separation by Time	Satisfactory if coordination between FSO, ALO, and pilots is good.	Limited if time windows are short and well coordinated with attack team leader.	Complicated. Requires close association between artillery units, FAC, and fighter units.	Good if a large target array is to be attacked for a long period of time.
Separation by Altitude (ACA)	Satisfactory if coordination between ALO, FSO, and pilots is good.	None.	Advance coordination between fighters and artillery units required.	Good.
Check Fire1	Least impact if unsuppressed ADA is not a factor.	Highly significant. ADA systems are not adequately suppressed. Immediate indirect fire attacks on targets detected by AH not possible.	Easy.	Unsatisfactory. Suboptimizes a single attack system without regard to target priority or combined effects of close support systems.

The joint air attack team supports the war effort in defensive and offensive operations. In the next learning event, you will learn about naval gunfire support, its personnel structure, and its employment in the battle plan.

Learning Event 5: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE CHARACTERISTICS, MISSIONS, CAPABILITIES AND LIMITATIONS OF NAVAL GUNFIRE SUPPORT; THE ORGANIZATION OF NAVAL GUNFIRE SUPPORT PERSONNEL; AND FSCOORD AND FIRE SUPPORT TEAM RESPONSIBILITIES IN THE EMPLOYMENT OF NAVAL GUNFIRE SUPPORT.

Naval gunfire can provide large volumes of immediately available, responsive fire support to combat forces operating close to coastal waters. These fires may be in support of amphibious operations within range of naval firepower. The following discussion, however, addresses only fires in support of land operations.

NAVAL GUNFIRE SUPPORT

The general mission of naval gunfire support, in conjunction with other supporting arms, is to help the maneuver force by destroying, neutralizing, or suppressing targets that oppose that force.

Tactical Missions of Naval Gunfire Support

Naval gunfire ships are assigned one of two missions, either direct support or general support, in much the same way that field artillery is organized for combat. Relationships between assigned ships and supported ground force units are on a basis of limited, delegated responsibility.

For example, ships placed in support provide the requested fire within their capability. However, the ship's positioning and method of delivery are left to the discretion of the ship captains. The supported ground force unit selects the targets, the timing of fires on the targets, and the adjustment of fires.

Direct Support. A ship in direct support of a specific troop unit delivers both planned and on-call fires. On-call fires are, to the ship, what targets of opportunity are to artillery units. A fire power control team (FCT) with the supported unit conducts and adjusts on-call fires. On-call fires may also be adjusted by a naval gunfire air spotter.

Members of the FCT are specially trained in the conduct of naval gunfire. However, the procedures are simplified and standardized so that any trained supporting arms observer can effectively adjust the fire of a ship.

When available, Navy and Marine air support can be provided through coordination with air and naval gunfire and liaison company (ANGLICO) representatives at the applicable level of command.

A direct support ship will respond to calls for fire from units other than the supported unit. This is done when so ordered by the fire support group commander, the division naval gunfire officer, or the brigade naval gunfire liaison officer.

General Support. General support missions are assigned to ships supporting units of brigade size or larger. The normal procedure is to have the fires of the general support ship adjusted by an aerial observer. It is also normal for the liaison officer to assign the fires of the ship to a battalion SFCP for fire missions. In the latter case, on completion of the mission, the ship reverts to general support. Prearranged fires are delivered in accordance with a schedule of fires.

Naval Gunfire Capabilities

The capabilities of naval gunfire ships include a wide variety of munitions with the ability for direct and indirect fire support. The ability to fire while underway increases its fire support capability to assist in countering the Threat forces.

Mobility. Within the limits imposed by hydrographic conditions, the naval gunfire ship may be positioned for the best support of the ground force. The ability of the ship to maneuver is an important factor in planning for fire support of separated forces. It allows the selection of the most favorable gun-target line.

Fire Control Equipment. Precision fire control equipment permits accurate fires, both direct and indirect, to be delivered in support of ground forces while the ship is either underway or at anchor.

Ammunition Variety. The variety of projectiles, powder charges, and fuzes permits selection of optimum combinations to provide for air, surface, or subsurface detonation of rounds.

Muzzle Velocity. The high initial muzzle velocity and relatively flat trajectory of the naval gun make it suitable for direct fire or assault fire. Naval guns are particularly suitable against material targets that must be penetrated or destroyed and that present a vertical face.

Rates of Fire. The large volume of fire that can be delivered in a relatively short period of time is a distinct advantage in delivery neutralization fires. For example, the 5-inch/54 (A1K 42) has a rate of fire of 36 rounds per minute at a rapid rate. It has a rate of 20 rounds per minute at a sustained rate. The weapons characteristics for naval gunfire can be found in Table 9.

TABLE 9. NAVAL GUNFIRE WEAPONS CHARACTERISTICS

SHIP	WEAPON	RANGE (METERS)		ROUNDS PER MINUTE		NUMBER OF ROUNDS	AMMUNITION AVAILABLE
		MAXIMUM	EFFECTIVE	RAPID	SUSTAINED		
Battleship	16-inch/50	37,000	37,000	—	—	1,200	HC, AP
	5-inch/38	18,000	15,000	20	15	6,540	COM, HC, ILLUM AAC, WP
	Tomahawk Cruise missile (land attack)	1,500 nautical miles	1,500 nautical miles	—	—	—	HE, NUC
		—	—	—	—	—	HE, NUC
Cruisers	5-inch/54	26,000	22,500	30	20	1,200	COM, ND, ILLUM, AAC, WP
Destroyers	5-inch/54	26,000	22,500	30	20	600	COM, HC, ILLUM, AAC, WP
	5-inch/38	18,000	15,000	20	15	500	COM, HC, ILLUM, AAC, WP
Fast Frigates	5-inch/54	26,000	22,500	30	20	600	COM, HC, ILLUM, AAC, WP
	5-inch/38	18,000	15,000	20	15	1,900	COM, HC, ILLUM, AAC, WP

Maximum rate for initial 5-minute period.
Maximum rate for extended period (30 min to 1hr).
Per tube.

LEGEND:
AAC = antiaircraft
AP = armor piercing
COM = common
HE = high explosive
HC = high capacity
ILLUM = star shell
NUC = nuclear
WP = white phosphorus

Deflection Pattern. The normal dispersion pattern is narrow in deflection and long in range. Very close supporting fire can be delivered when the gun-target line is parallel to the front line. This pattern also permits effective coverage of such targets as roads and runways when the gun-target line coincides with the long axis of the target.

Naval Gunfire Limitations

There are several limiting factors to consider when using naval gunfire ships. Their restriction to water mobility and weather conditions play a large role in their capabilities and limitations.

Flat Trajectory. The relatively flat trajectory of naval gunfire results in a large range probable error. Therefore the dispersion pattern of the naval gun is roughly elliptical, with the long axis in the direction of the fire. Before selecting naval gunfire as the proper fire support means, the FSCOORD must consider the G-T line and its relation to the forward line of own troops (FLOT).

Hydrography. The hydrographic conditions of the waters in which the naval gunfire ship must operate may be unfavorable. This may cause undesirable firing positions or require firing at longer ranges.

Fixing of Ship Position. The accuracy of naval gunfire depends on the accuracy with which the position of the firing ship has been fixed. Navigational aids, prominent terrain features, or radar beacons emplaced on the shore may be used to compensate for this limitation.

Weather and Visibility. Bad weather and poor visibility make it difficult to determine the position of the ship by visual means. This can reduce the observer's opportunity for locating targets and adjusting fires. Also, bad weather might force the ship out to sea.

Changing Gun-Target Line. When the ship is firing while under way, the line of fire in relation to the front line may change. This could require cancellation of the fire mission because the inherent large range probable errors may cause rounds to endanger friendly forces.

Communications. The sole means of communication between the ship and shore is radio. Normally, several nets are established to control and coordinate the support. Radio communications can be interrupted by equipment limitations, enemy electronic warfare, and unfavorable atmospheric conditions.

Enemy Action. The naval gunfire ship may come under enemy surface, subsurface, or air attack. When this occurs, the ship may cancel its fire mission with the ground forces and attempt to counter the threat.

Magazine Capacity. The shore bombardment allowance varies with the ship type (600 to 1,800 rounds). When the need arises, remaining rounds will be held for self-defense of the ship.

NAVAL GUNFIRE SUPPORT PERSONNEL

Air and naval gunfire liaison company personnel are available to advise unit commanders from company through division levels on how to best use the navy air and gunfire support available to them. Liaison personnel can provide unit commanders and FSCOORDs with information on weapons' ranges, ammunition effects, all-weather bombing capability, and landing zone requirements.

For maximum effectiveness, ANGLICO support should begin during the planning phase of an operation. The ANGLICO task-organized teams and parties should be attached to the units they will support as soon as possible.

ANGLICO personnel at all levels, company through division, are trained as naval gunfire spotters and or forward air controllers. They can request and control missions for the units they support. In order that they can move in the same manner as the unit they support, ANGLICO personnel are trained in parachuting, skiing, snowshoeing, and inflatable rubber boat operations.

Organization of the Air and Naval Gunfire Liaison Company

The ANGLICO (Figure 6) is composed of a company headquarters and a division air and naval gunfire team. The division air and naval gunfire team provides personnel and equipment as a party of the division FSE who advises plans and coordinates both naval gunfire and naval marine air support at division level. The brigade air and naval gunfire platoons provide a personnel and communications package for control and employment of air and naval gunfire at the brigade and battalion levels.

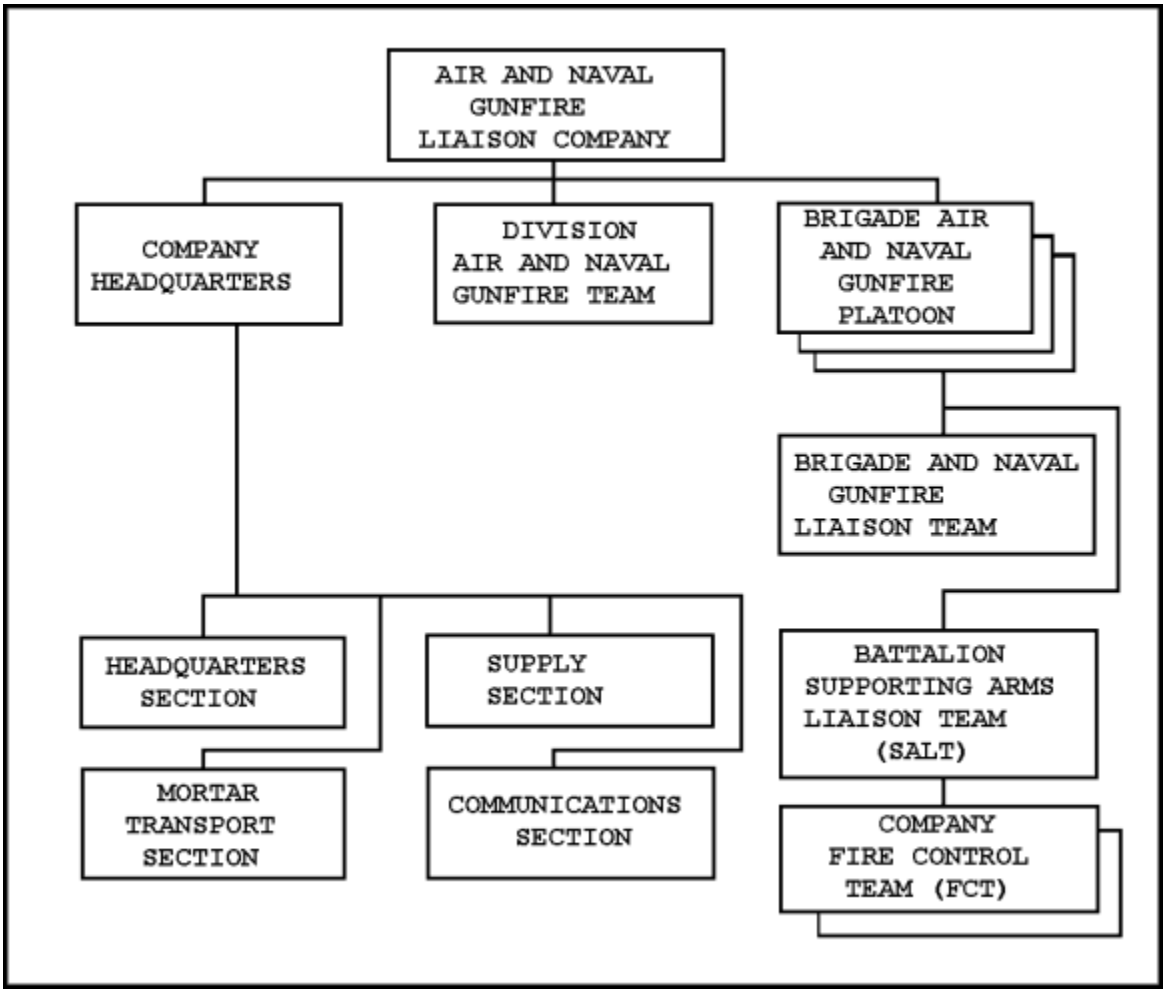


FIGURE 6. ORGANIZATION OF THE AIR AND NAVAL GUNFIRE LIAISON COMPANY

Division. At the division level, the ANGLICO will provide a Marine lieutenant colonel (company commander) and three majors (lieutenant commanders) or captains (two of which are marine or navy aviators). They will function as the NGF officers and marine/naval air liaison officers in the division fire elements (main and TAC).

Brigade. At the brigade level, a naval gunfire liaison officer is provided. He will be located in the fire support element (FSE).

Battalion/Company. Within the brigade, two battalions will each be assigned as supporting arms liaison team (SALT). Each of these teams consists of two fire power control teams (FCTs), an air liaison officer, and communicators that are located with the battalion FSE. Each FCT consists of enlisted naval spotters and communicators with two of the companies in a battalion.

Adjustment of Naval Gunfire by the FIST

When naval gunfire is available, the FIST may sometimes have to adjust it because of a shortage of fire power control teams (FCT) (two per battalion [SALT]). All forward observer personnel must know the unique considerations of adjusting naval gunfire. They must also be aware of other considerations, such as communications.

Call for Fire. The call for fire for naval gunfire follows the same general format as a call for fire for artillery support. Certain elements are modified when NGF support is requested. A detailed description of the procedures used in the call for fire for artillery support. Certain elements are modified when NGF support is requested. A detailed description of the procedures used in the call for fire and adjustment of naval gunfire can be found, when needed, in FM 6-30.

Communications. The FIST will not be able to communicate directly with the fire support ship. It has two options for relaying the call for fire and subsequent commands. These options are:

- Use the designated field artillery fire direction net to talk to the naval gunfire liaison officer (NGLO). The NGLO is collocated with the maneuver battalion FSO in the fire support element. The NGLO relays the commands to the fire support ship by means of his high frequency (HF/VHF) radio. This is the preferred method.
- Use the designated field artillery fire direction net to talk to the FCT. The FCT is collocated with one of the other FISTs in the battalion. Using its radio, the FCT then relays the call for fire and subsequent commands.

The FSCOORD at each level must know the capabilities and limitations of naval gunfire. He must also ensure that observers are trained in the adjustment of NGF. When neither a FIST nor a spot team is available, it may be necessary for other personnel to adjust naval gunfire (for example, a FAC, JAAT personnel, or a scout).

CONCLUSION

In this lesson, you have learned about non-field artillery sources of fire support. Limitations of air support and the FSCOORD role in fire support planning have also been discussed. You have become familiar with the employment considerations for use of attack helicopters, the joint air attack team operations, and naval gunfire support. With this fire support you can plan, coordinate, and execute battles to counter Threat forces as they occur.

LESSON 2
PRACTICE EXERCISE

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

SITUATION

You are a maneuver commander in a position preparing the movement to contact in the forward battle area.

1. You are planning fire support with the FSO. You plan to employ the use of mortars. In employment of mortars, you must

   ○ A. review distribution of support resources and redistribute accordingly.
   B. consider the high-trajectory projectile, which is more easily detected by radar and adversely affected by strong winds.
   C. consider delivery restrictions imposed by night and weather.
   D. determine if they will be fired within 500 meters of other direct fire weapons.

SITUATION

You are a maneuver company/team leader. You are under attack and must call for fire support.

2. You are on the reverse slope of a hill from where your support element is located. The FSO will probably

   A. recommend the use of mortars because of your location.
   B. provide air support because of its speed.
   C. send an attack helicopter because of your position.
   D. call for naval gunfire since you are within 30 kilometers of a major body of water.

SITUATION

You are a maneuver commander planning a movement to contact operation. You have planned your fire support with your FSO.

3. Together, you have decided that you will use close air support in this operation. The FSCOORD

    A. provides planning information on air support to the assistant G3 air for the development of allocation recommendations.
    B. decides if CAS can be used while indirect fire weapons are being used at the same time.
    C. decides if it will provide destructive or neutralizing fire as opposed to suppressive fire.
    D. provides effective results while isolating critical elements in the target area.

SITUATION (questions 4 and 5)

As a maneuver commander, you are planning an operation with the FSO. The S3/G3 and the ALO consider delivery restrictions imposed by air defense.

4. When faced with an intense array of surface-to-air missiles and antiaircraft artillery, air support aircraft have several options. The FSCOORD

    A. decides whether aircraft armament can achieve the desired result.

    B. decides to use low-altitude penetration.

    C. provides FIST and O/L personnel to guide the bombs to the targets.

    D. provides aircraft which can remain on station until the desired effect has been reached.

5. You are a brigade maneuver commander planning an offensive operation in an area where suspected enemy tanks are located. You coordinate your operation with the FSO and the ALO because you desire to use attack helicopters to soften the attack zone. The FSCOORD coordinates the fire plan, and your brigade gets a platoon of AH-1s. They are

    A. selected because they have TOW capability.

    B. provided because the ordnance they normally carry is what you need.
    C. selected because they have indirect fire capability.

    D. provided because of their mobility and capability.

SITUATION

You are a company commander. Your element is under attack, at night, by enemy tanks.

6. You call for air support so you can withdraw from contact. The FSCOORD coordinates the support and provides you with

    A. a company of AH-1s with 30-mm cannon capability.

    B. a company of AH-64s with 2.75-inch rockets.

    C. AH-1s with 40-mm grenades on board.

    D. a platoon of AH-64s with HELLFIRE on board.

You are a brigade commander with elements in contact with the enemy. You and the FSO plan to employ JAAT forces to hold your position.

7. The FSCOORD must pass information to the CAS pilots so they can engage the planned target without getting hit by friendly forces' fire at the same time. The FSCOORD

    A. provides the relationship of artillery position to impact position for the pilot to compute his attack route.
    B. gives the terrain description and artillery firing positions to the pilot.

    C. uses the grid coordinates technique, and sends artillery points of impact coordinates to fighter pilots by radio.
    D. provides real-time observation to see and avoid artillery danger areas.

SITUATION

You are the brigade commander coordinating with the FSO in planning an attack. The commander has stated he needs maximum firepower for several targets over a short time.

8. The commander's guidance has

    A. selected the option of joint attack.

    B. given you the option of separation by time or altitude.

    C. provided you with one option of separation by sector.

    D. selected the option of check fire on CAS.

SITUATION (questions 9 and 10)

You are a company element commander. Your element is under attack near coastal waters. You know there is a battleship within range of your location. You contact the forward support element FSO and relay your situation.

9. The FSCOORD coordinates the fire support and your company

    A. gets several 5-inch/54 rounds in front of your locations.

    B. receives AAC rounds close to your location.

    C. receives several 16-inch/50 rounds on coordinates given.

    D. gets star shell rounds over the enemy position.

10. As a brigade commander, you will often have naval gunfire in direct support of the brigade's operations. The personnel who assist in support from naval gunfire ships are the

    A. ABC and the AHLO.

    B. FCT and the ANGLICO.

    C. FAC and the TACP.

    D. AME and the G3 air.

LESSON 3

FIRE SUPPORT PLANNING

TASK

Identify target terms, procedures and techniques for targeting, and the fundamentals of fire support planning and coordination.

CONDITIONS

Given the subcourse material for this lesson, a training scenario and extracts, as applicable, the student will complete the practice exercise at the end of this lesson.

STANDARD

The student will demonstrate his comprehension and knowledge of the task by identifying target terms, procedures and techniques for targeting, and the fundamentals of fire support planning and coordination.

REFERENCES

FM 6-20
FM 6-30

GENERAL

To prepare fire support plans, the FSCOORD at all levels must understand the terminology and techniques used in targeting and fire planning.

The word "target" is the most fundamental term used in fire support planning. In fire support operations, a target is any personnel, materiel, or piece of terrain that is designated and numbered for future reference and or firing.

Learning Event 1: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING TARGET TERMS AND TARGETING TECHNIQUES USED IN FIRE SUPPORT PLANNING.

TARGET CLASSIFICATION

Each target can be classified as either a planned target or a target of opportunity. Each type of target will be discussed separately.

Target of Opportunity

A target of opportunity is a target that appears during combat. It can be reached by ground, naval, or aircraft fire. No previous plans for fire have been prearranged against the target.

Planned Target

A planned target is one for which fire is prearranged. The degree of prearrangement varies, but some prior arrangement has been made to facilitate its engagement.

Individually, planned targets may be further subdivided into scheduled, on-call, and priority targets.

Scheduled Target. A scheduled target is a planned target on which fire is to be delivered at a specified time. The time may be related to an H-hour or another time reference. However, once the reference has been established, the scheduled target will have a definite time sequence.

On-Call Target. An on-call target is a planned target other than a scheduled target on which fire is to be delivered when requested. The on-call target requires less reaction time than a target of opportunity.

Priority Target

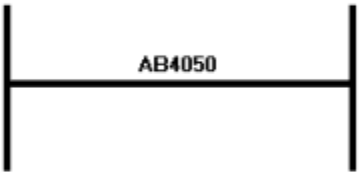
A priority target is a target on which the delivery of fires takes precedence over all other fires for the designated firing unit or element.

The supported commander designates priority targets. He provides the FSCOORD specific guidance as to when targets will become priority targets and when they no longer will be priority targets. The commander should state the desired effects on targets and any special types of ammunition to be used. When they are not engaged in a fire mission, firing units lay their weapons on assigned priority targets. Generally, each priority target has a fire unit laid on it. However, in dedicated battery operations, designated weapons may be assigned priority targets. This allows the rest of the battery to fire in support of the maneuvering unit. An example of a priority target in a defensive situation is final protective fires. Final protective fires will be discussed later in this lesson.

The use of symbols in the preparation of maps, charts, and overlays is basic military procedure. Complete information on general military symbols is in FM 101-5-1.

TARGET SYMBOLS

The symbols most common to the fire support planner are those relating to targets and fire support coordination measures. Figure 7, presents the various types of targets and their appropriate symbols.

TYPE TARGET	CONVENTIONAL	LINEAR
DISCUSSION	A cross is used to represent a point target. It may be canted if several targets are near each other or if the symbol could be confused with a grid line or intersection. The intersection of the lines represents target center. The target list discussed later describes other relevant target information.	This symbol is for targets that are long and narrow; for example, sections of roads and trench lines. The coordinates identify the center point. The target list gives other characteristics.
SYMBOL		

Notes.

1. For FA fire planning, if the dimensions of a target exceed the width of an open sheaf or a depth of 250 meters, consideration should be given to creating multiple targets and including them in a group of targets.

2. Maneuver units may use target reference points (TRP) to orient personnel and direct fire weapons. These TRPs should be numbered by using the standard target numbering system.

FIGURE 7. TARGET SYMBOLS

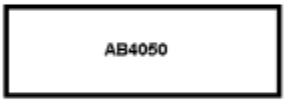
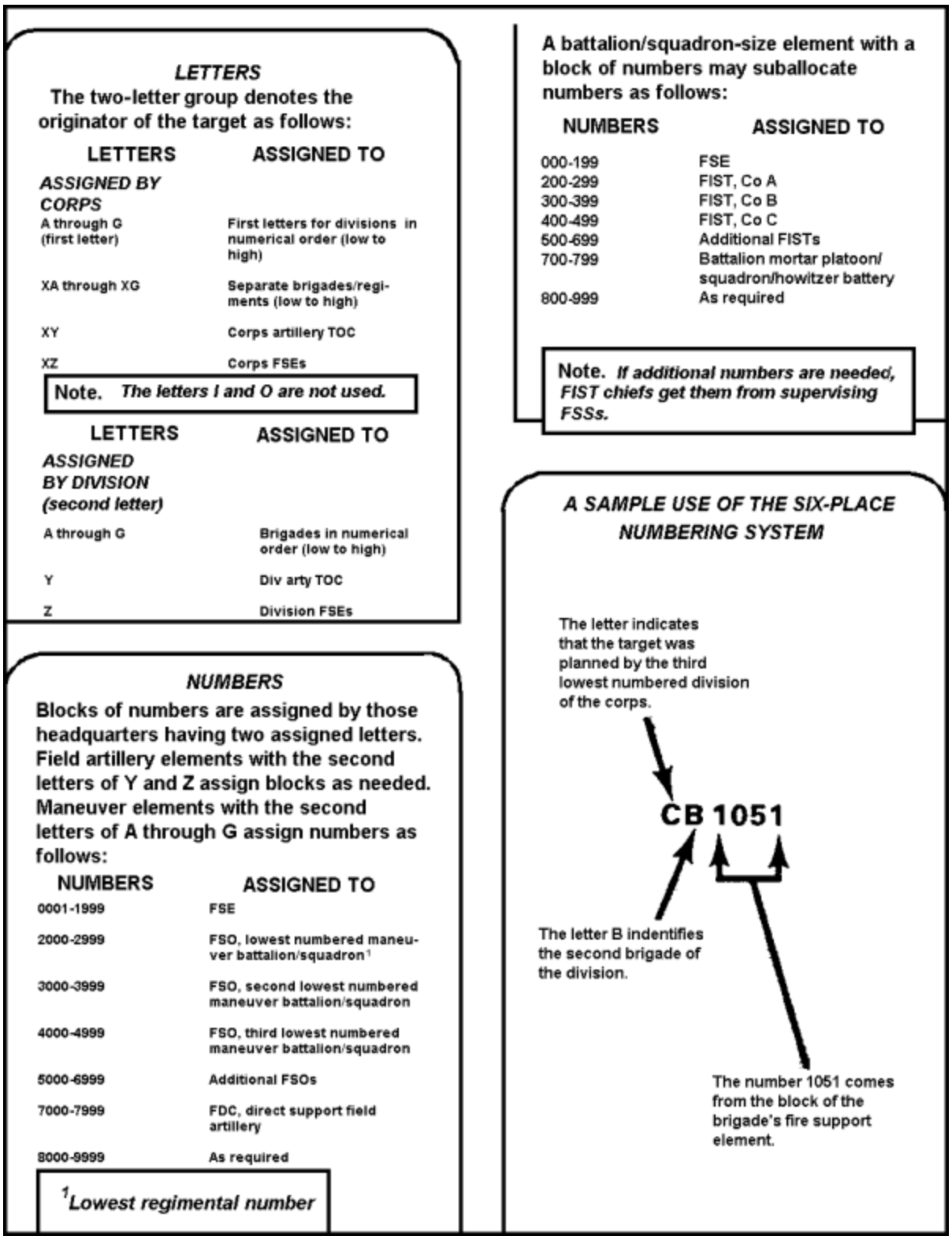
TYPE TARGET	RECTANGULAR	CIRCULAR	SPECIAL AMMUNITION
DISCUSSION	This symbol is for targets that have both length and width. The coordinates identify the center point. The length and width are overall length and width.	This symbol represents an area target. The coordinates identify the center point. Radius of the target is shown on the target list in the width column.	This symbol is used for chemical and nuclear targets. Each quadrant contains the information shown.
SYMBOL			

FIGURE 7A. TARGET SYMBOLS

TARGET NUMBERING

To designate non-nuclear targets for fire support operations, the Army adheres to the provisions of STANAG 2147 and QSTAG 221. Target designators consist of two letters followed by four numerals; for example, AA1000. This numbering system is used for each corps-size force. Table 10, explains the assignment of letters and numbers to form a target designator.

TABLE 10. LETTERS



Normally, nuclear and chemical targets are not assigned a special block of target numbers. A target should be assigned a number when it is received at a fire planning agency. If a target is selected for attack, the most appropriate means of attacking the target will be used (nuclear, chemical, or

conventional) as determined by target analysis. That analysis is guided by the commander's attack guidance and other factors, such as nature of the target and the munitions available.

Learning Event 2: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING ARTILLERY CANNON AND ROCKET CHARACTERISTICS.

When planning and scheduling weapons for fire missions, it is important that you schedule the proper weapon for the job to be performed. Some weapons may not have adequate range to fire at targets in all phases of the schedule. Other weapons may not have the necessary sustained or maximum rate of fire to properly cover the target area. Still other weapons may not be capable of firing the proper type of ammunition for the mission. Tables 12 and 12A, list the characteristics of artillery cannons and rockets. The data presented should be used in planning and scheduling the right weapons for the mission to be performed.

TABLE 12. ARTILLERY CANNON AND ROCKET CHARACTERISTICS

ASSET	MAXIMUM RANGE (METERS) a. WITH RAP b. WITHOUT RAP	MAXIMUM RATE OF FIRE	SUSTAINED RATE OF FIRE	AMMUNITION AVAILABLE
Self-Propelled 155-mm Howitzer M109A1/A2/A3	a. 23,500 b. 18,100	4 rounds per minute	1 round per minute	HE, RAP, ICM, HC, illum, DPICM, ADAM, nuc, WP, chemical, RAAMS, CPHD
Self-Propelled 203-mm Howitzer M110A2	a. 30,000 b. 22,900	1.5 rounds per minute	0.5 round per minute	HE, ICM, nuc, chemical, DPICM, RAP
Self-Propelled 227-mm Multiple Launch Rocket System M270	a. NA b. 30,000	1 round per 1.5 seconds	1 round per 4.5 seconds	DPCIM, TGW[2], chemical[2]
Towed 105-mm Howitzer L119	a. IRAP-19,500 RAP-15,400 b. 14,300	10 rounds per minute	3 rounds per minute	HE, WP, HESH, illum

[1]Includes CS (riot control agent), nonpersistent nerve (SB), and mustard (H).

[2]Both the TGW and binary chemical warheads are under development. Neither is currently fielded.

TABLE 12A. ARTILLERY AND ROCKET CHARACTERISTICS (continued)

ASSET	MAXIMUM RANGE (METERS) a. WITH RAP b. WITHOUT RAP	MAXIMUM RATE OF FIRE	SUSTAINED RATE OF FIRE	AMMUNITION AVAILABLE
Towed 105-mm Howitzer M101A1	a. 14,500 b. 11,600	10 rounds per minute	3 rounds per minute	APERS, gas[1], HE, ICM, RAP, HEP-T, illum, HC, WP
Towed 105-mm Howitzer M102	a. 15,100 b. 12,400	10 rounds per minute	3 rounds per minute	APERS, gas[1], HE, ICM, RAP, HEP-T, illum, HC, WP
Towed 105-mm Howitzer M114A1	a. NA b. 14,600	4 rounds per minute	1 round per minute	HE, ICM, illum, nuc, HC, WP chemical
Towed 105-mm Howitzer M114A2	a. 19,300 b. 14,600	4 rounds per minute	1 round per minute	HE, RAP, ICM, illum, DPICM, ADAM, HC, WP nuc, chemical, RAAMS, CPHD
Towed 105-mm Howitzer M198	a. 30,000 b. 22,400	4 rounds per minute	As indicated by thermal warning device	HE, RAP, ICM, illum, DPICM, ADAM, nuc, WP, chemical, RAAMS, CPHD

LEGEND:

APERS=antipersonnel
CPHD=Copperhead
HC=smoke
HEP-T=high explosive plastic tracer
HESH=high-exploseive squash head (antitank, UK)
illum=illuminating
IRAP=improved rocket-assited projectile
NA=not applicable
nuc=nuclear
RAP=rocket-assisted projectile
TGW=terminally guided warhead

You should now be familiar with the characteristics of the various artillery cannons and rockets. The next learning event will introduce you to the necessary planning criteria and implementation procedures for conducting a final protective fire.

Learning Event 3: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE PLANNING CRITERIA AND IMPLEMENTING PROCEDURES FOR A FINAL PROTECTIVE FIRE.

PLANNING FIRES

Fire planning, like fire support planning, is a continuous process conducted by FSCOORDs at all levels to ensure that fires support the commander's operation plan. Fire is prearranged on these targets to ensure responsive engagement when requested. Although some of the planned fires apply to offensive or defensive actions only, others are appropriate to all types of operations and levels of combat.

When operating as part of a multinational force, the US will implement STANAG 2031/QSTAG 515. The provisions of ratified STANAG 2031/QSTAG 515 have been incorporated throughout the discussions of target lists, target overlays, artillery fire plans, and artillery quick-fire plans in this lesson and elsewhere in this publication.

Procedures for fire planning vary, depending on whether the supporting unit is equipped with automated equipment. The fire planning techniques for final protective fires, fires using smoke, and schedules of fire are described in the following paragraphs.

FINAL PROTECTIVE FIRES

FPFs are immediately available fires designated to create a barrier to impede enemy movement across defensive lines or areas. They are integrated with the commander's defensive plans and are intended for use primarily against dismounted infantry. Maneuver brigade commanders allocate FPFs to maneuver battalions, which in turn allocate them to their companies.

FPFs are allocated one per firing unit (field artillery), one per section (81-mm mortars) or one per platoon (107-mm mortars). When they are not engaged in another fire mission, weapons are laid on firing data for final protective fires. This ensures immediate responses to calls for final protective fires.

The shape and pattern of these fires may be varied to suit the tactical situation on the basis of the support company commander's desires. Authority to call for the FPFs is vested in the supported company commander or platoon leader in whose area they are located. On the target list work sheet, a target is designated as the FPF target by placing the letters "FPF" in the REMARKS column space for that particular target. FPF targets are designated by target number.

Size of FPF

The size of the FPF depends on the type of weapon used to deliver the fire. Table 13, below, shows the size of the protective fire area each weapon is capable of delivering.

TABLE 13. FPF PLANNING

SIZE	TYPE	NUMBER OF WEAPONS	WIDTH IN METERS (APPX)	DEPTH IN METERS (APPX)
120-mm	M285	6 (PLATOON)	350	60
120-mm	M285	3 (SECTION)	180	60
107-mm	M30	6 (PLATOON)	250	40
107-mm	M30	4 (PLATOON)	160	40
107-mm	M30	3 (SECTION)	120	40
81-mm	M29A1	4 (PLATOON)	140	40
81-mm	M29A1	3 (SECTION)	100	40
81-mm	M252	4 (PLATOON)	150	50
60-mm	M224	2 (SECTION)	75	30
105-mm	Howitzer	3 GUNS	105	35
105-mm	Howitzer	6 GUNS	210	35
155-mm	Howitzer	4 GUNS	200	50
155-mm	Howitzer	6 GUNS	300	50
155-mm	Howitzer	8 GUNS	400	50
203-mm	Howitzer	4 GUNS	320	80
203-mm	Howitzer	8 GUNS	640	80

Location of FPF

The location of the FPF normally is designated by the maneuver commander for whom it is being planned. It may be any distance from the friendly position that supports the current tactical situation which is within range of organic direct fire weapons. This is normally within 200 to 400 meters (danger close). The importance of accurate defensive fires and the danger close situation require that each weapon firing the FPF be adjusted into place, if possible.

In using a battery computer system (BCS) or a manual fire direction center, the call for fire is similar to the normal call for fire in an adjust fire mission, except that--

- If an adjustment is to be done, the target location initially sent is not the location of the center of the FPF. It is a grid point a safe distance (400 to 600 meters) from the location of friendly troops. Because this grid is part of a final defensive plan, it should be encoded. The attitude or direction of the long axis of the FPF is announced.

- In place of a target description, FINAL PROTECTIVE FIRES is announced.

- DANGER CLOSE is announced in the method of engagement.

The firing unit fires one volley centered on the initial grid sent by the observer. Assume that the rounds impact as shown in Figure 10 below. The observer begins his adjustment with the flank piece impacting closest to the FPF line (in this case, Number 1). Recall that creeping fire must be used because of the danger close situation. Corrections of 50 meters or less are not fired.

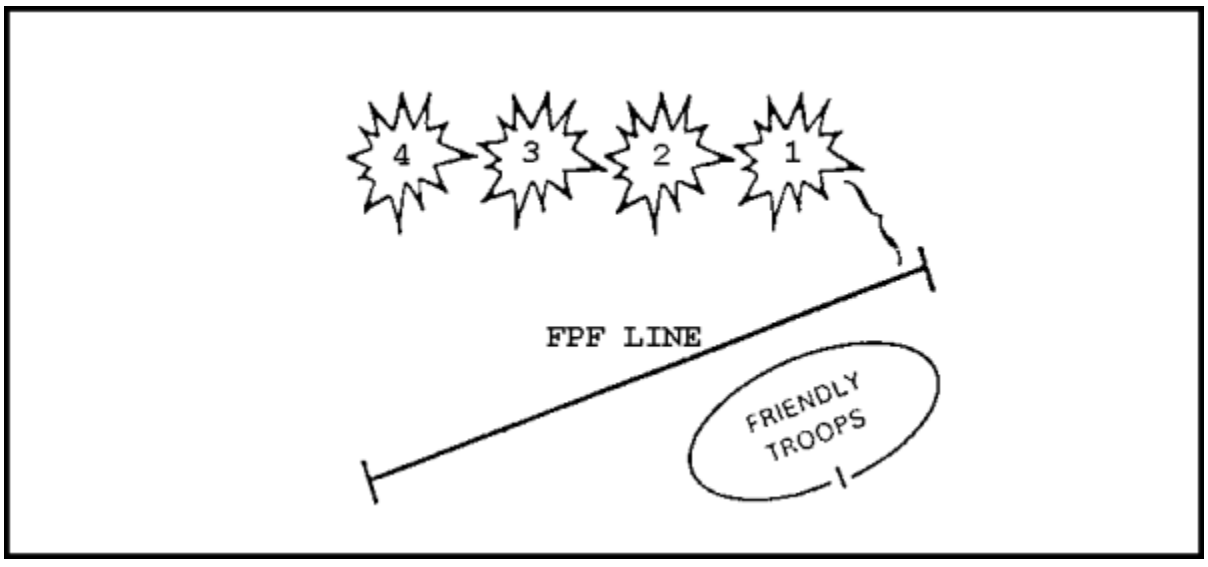


FIGURE 10. ADJUSTMENT OF THE FPF

Once the first gun is adjusted, the observer sends NUMBER 2, REPEAT and adjusts each weapon in succession.

NOTE: If the FDC is using a computer (BCS or BUCS), only the center weapon will be adjusted onto the center grid of the FPF and the adjustment terminated.

Fuze delay should be used in adjustment to reduce the safety hazard to friendly units.

In some instances, there will not be time to "shoot in" the FPF. The observer will call in the FPF, giving the grids of the two ends or giving the center grid and attitude. If the FDC is using a battery computer systems (BCS), then length, width, and altitude or laser draw is sent.

You have just learned about the planning criteria for implementation and procedures for a final protective fire. You must now study the criteria and techniques for establishing graphic portrayal of fire support coordinating measures.

Learning Event 4: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE CRITERIA FOR ESTABLISHING, AND THE TECHNIQUES FOR GRAPHIC PORTRAYAL OF, FIRE SUPPORT COORDINATING MEASURES.

GENERAL

The FSCOORD coordinates all fire support impacting in the area of responsibility of his supported maneuver commander. This includes fires requested by the supported unit. He ensures that fire support will not jeopardize troop safety, will interface with other fire support means, and will not disrupt adjacent unit operations. Fire support coordinating measures help him in those efforts. They are designed to facilitate the rapid engagement of targets and at the same time provide safeguards for friendly forces.

ESTABLISHMENT AND GRAPHIC PORTRAYAL

All fire support coordinating measures, except boundaries, are established by the supported maneuver commander on the basis of recommendations by the FSCOORD. The FSCOORD's recommendations are based on the force commander's guidance, and anticipated enemy actions.

Once established, coordinating measures are displayed on maps, firing charts, and overlays and are stored in computers. Graphic portrayal includes, as a minimum, the abbreviation for the measure, the establishing headquarters, and the effective date-time group (DTG). Often, the date-time group will be indicated as a "from-to" time. Usually, coordinating measures are labeled at each end of a line or within the graphic, space permitting.

All fire support coordination measures are drawn and lettered in black. When only one color can be used (for example, in automatic data processing [ADP] graphics), restrictive measures may be coded with double lines. In this case, the outermost line is the actual boundary of the measure.

BOUNDARIES

Boundaries are used by the maneuver commander in various operations to indicate the geographical area for which a particular unit is responsible. They describe a zone of action or sector of responsibility for a maneuver unit. Boundaries are normally designated along terrain features easily recognizable on the ground. They are so situated that key terrain features and avenues of advance or approach are completely included in the area assigned to one unit. Boundaries are the basic fire support coordinating measure. As such, they are both permissive and restrictive in nature.

Boundaries are restrictive in that no fire support units may deliver fires across them unless the fires are coordinated with the force having responsibility within the boundary. Also, if a permissive fire support

coordinating measure is in effect, that would allow firing without further coordination. Fires delivered near boundaries also should be coordinated with the adjacent unit. They are permissive in that a maneuver commander, unless otherwise restricted, enjoys complete freedom of fire and maneuver within his own boundaries.

Boundaries apply to both the maneuver of units and the employment of fire, to include conventional and special ammunition and their effects. Boundaries are displayed as solid black lines with the appropriate designation of the unit(s) to which the boundary applies. Proposed or planned boundaries are displayed as dashed black lines. Boundaries are also used by fire support personnel to designate the zone of fire for supporting field artillery and naval gunfire ships.

TYPES OF MEASURES

With the exception of boundaries, fire support coordinating measures are either permissive or restrictive. With the establishment of a permissive measure, no further coordination is required for the engagement of targets affected by the measure. In essence, the primary purpose of the permissive measure is to facilitate the attack of targets.

The establishment of a restrictive measure imposes certain requirements for specific coordination before the engagement of those targets affected by the measure. Therefore, the primary purpose of restrictive measures is to provide safeguards for friendly forces.

Permissive Measures

Permissive measures that may be established to save time in fire support planning are--

- Coordinated fire lines.
- Fire support coordination lines.
- Free-fire areas.

Each measure will be discussed separately in the following paragraphs.

Coordinated Fire Line (CFL). A coordinated fire line is a line beyond which conventional or improved conventional indirect fire means may fire (Figure 11). Firing may be done at any time within the zone of the establishing headquarters without additional coordination. The purpose of the CFL is to expedite the attack of targets beyond it. Usually, the CFL is established by a brigade or a division, but it may be established by a maneuver battalion.

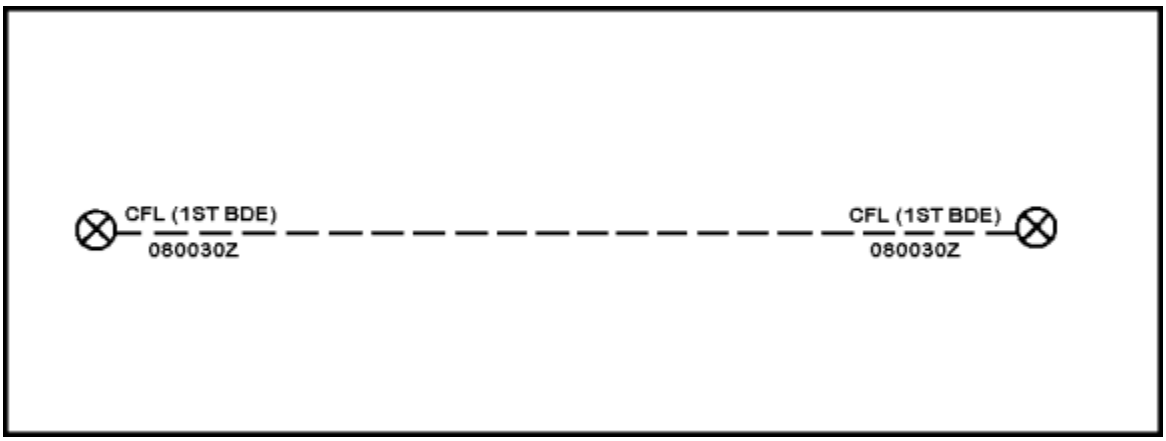


FIGURE 11. COORDINATED FIRE LINE

NOTE: The United States uses the coordinated fire line instead of the no-fire line (described in STANAG 2099). A US reservation to the STANAG reflects this.

The CFL is as close to the establishing unit as is possible, without interfering with maneuver forces to open up the area beyond to fire support. Brigade CFLs may be consolidated at division level as a division CFL designated for the division zone of action. If any modifications to the brigade CFLs are considered, they must be coordinated with the brigades to ensure complete compatibility with their battle plans.

In essence, the brigade commanders establish CFLs and the division commander merely consolidates them and designates a division coordinated fire line. The CFL is graphically portrayed by a dashed black line. CFL, followed by the establishing headquarters in parentheses, is printed above the dotted line. A date-time group is printed below the line.

Locations for CFLs are disseminated by message and or overlay. They are channeled through both the maneuver and fire support channels to higher, lower, and adjacent maneuver and supporting units.

Fire Support Coordination Line (FSCL). A fire support coordination line (Figure 12) is established by the appropriate ground commander. The FSCL ensures coordination of fire that is under the control of the commander, but may affect current tactical operations. The FSCL is used to coordinate the fire of air-, ground-, and sea-launched weapons, using any type of ammunition against surface targets. It is described in STANAG 2099. The FSCL should follow well-defined terrain features.

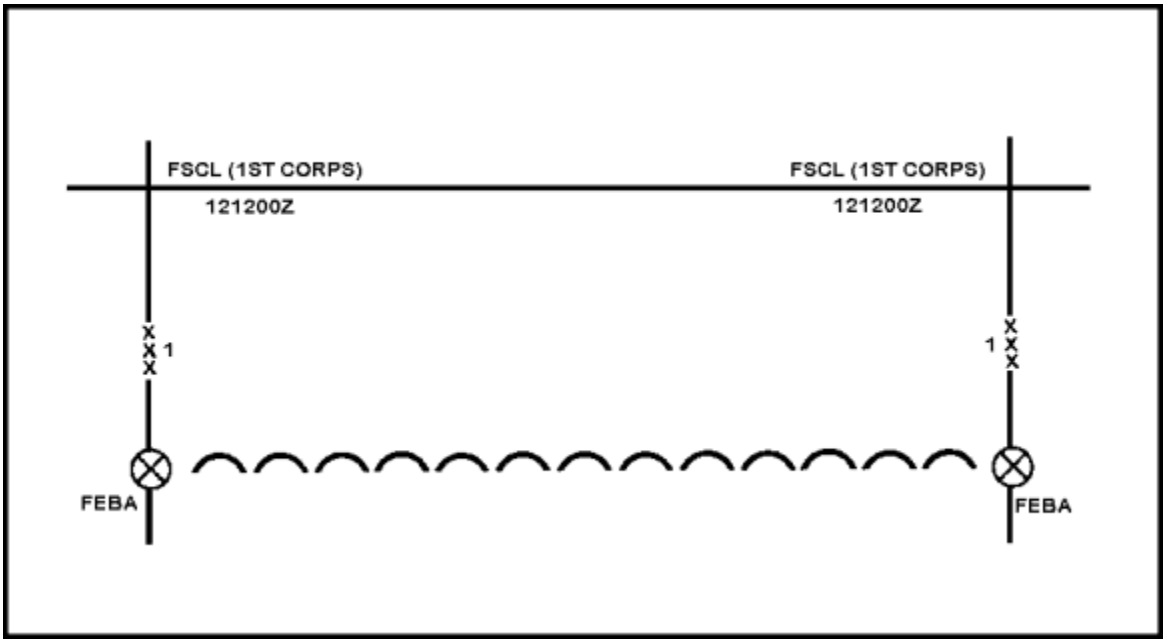


FIGURE 12. FIRE SUPPORT COORDINATION LINE

The establishment of the FSCL must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the FSCL without prior coordination with the ground force commander. This can only be done if the attack will not produce adverse effects on or to the rear of the line.

Attacks against surface targets short of the line must be coordinated with the appropriate ground force commander. The purpose of the FSCL is to expedite the attack of targets beyond it. Usually, the line is established by a corps (independent division) commander. It is normally placed on terrain identifiable from the air (for example, a road, railroad, or river). Dissemination is the same as that for the coordinated fire line.

When the fire support coordination line is planned, its location is sent up and down the planners chain of command, using the standard message format in Figure 13.

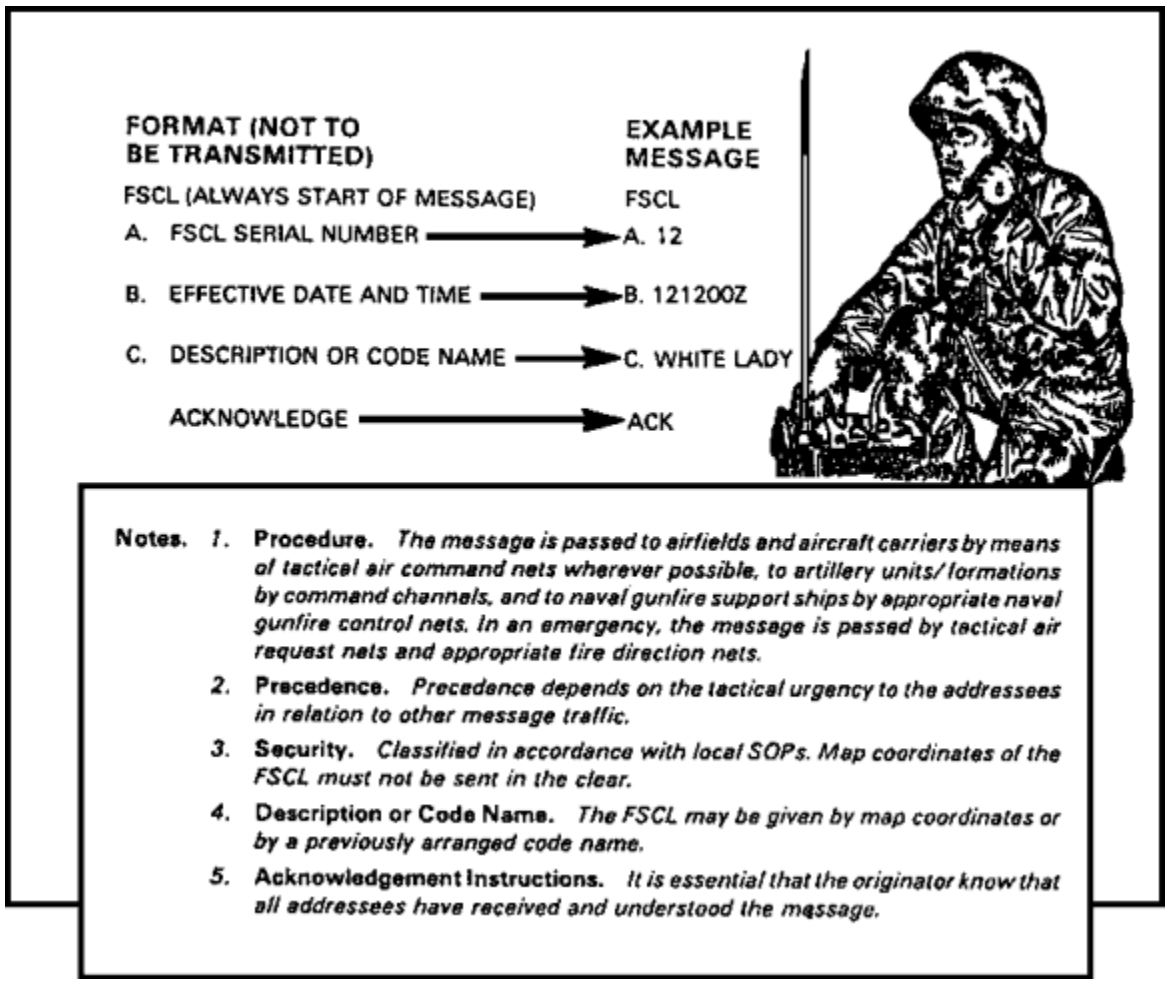


FIGURE 13. STANDARD MESSAGE FORMAT FOR FSCL

Free-Fire Area. A free-fire area (Figure 14) is a specific area into which any weapon system may fire without additional coordination with the establishing headquarters. It is used to expedite fires and facilitate the jettison of munitions when aircraft are unable to drop them on a target area.

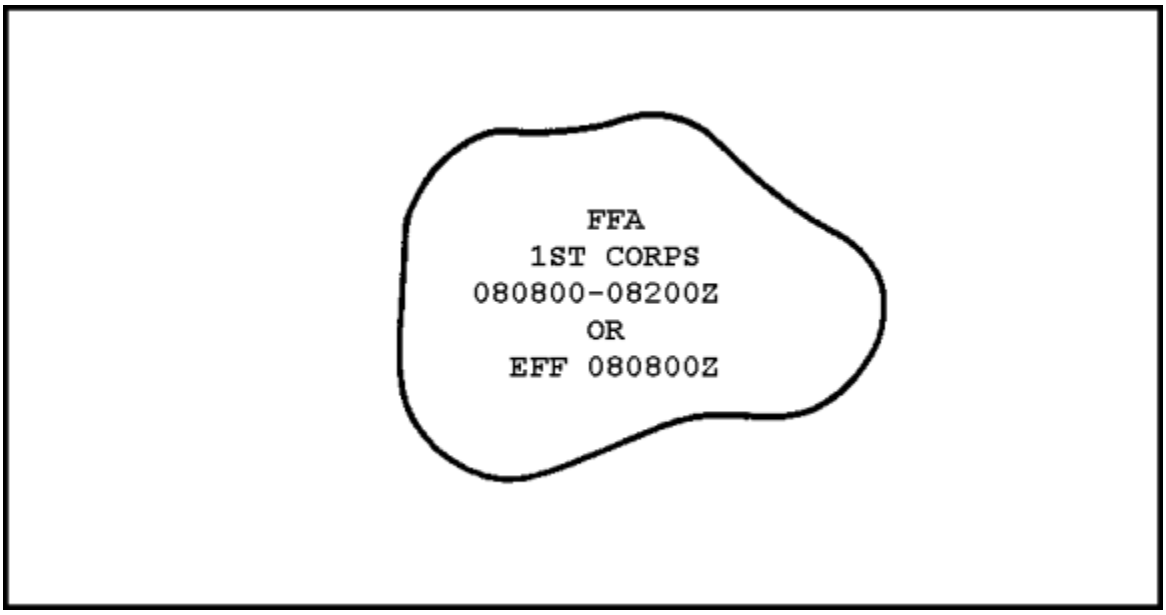


FIGURE 14. FREE-FIRE AREA

Usually, the FFA is established by a division or higher commander. It is located on identifiable terrain, when possible, or by grid designation, when necessary. It is disseminated through both maneuver and fire support channels.

Restrictive measures

Restrictive measures that may be established include--

- Restrictive fire lines.
- Airspace coordination areas.
- No-fire areas.
- Restrictive fire areas.

Each measure will be discussed separately in the following paragraphs.

Restrictive Fire Line. The restrictive fire lines is a line established between converging friendly forces (one or both may be moving) that prohibits fires or the effects of fires across the line without coordination with the affected force (Figure 15). The purpose of the line is to prevent interference between the converging friendly forces. It is established by the commander common to the converging forces. It is on identifiable terrain, usually closer to the stationary force. Its location is disseminated in the same manner as that of a coordinated fire line.

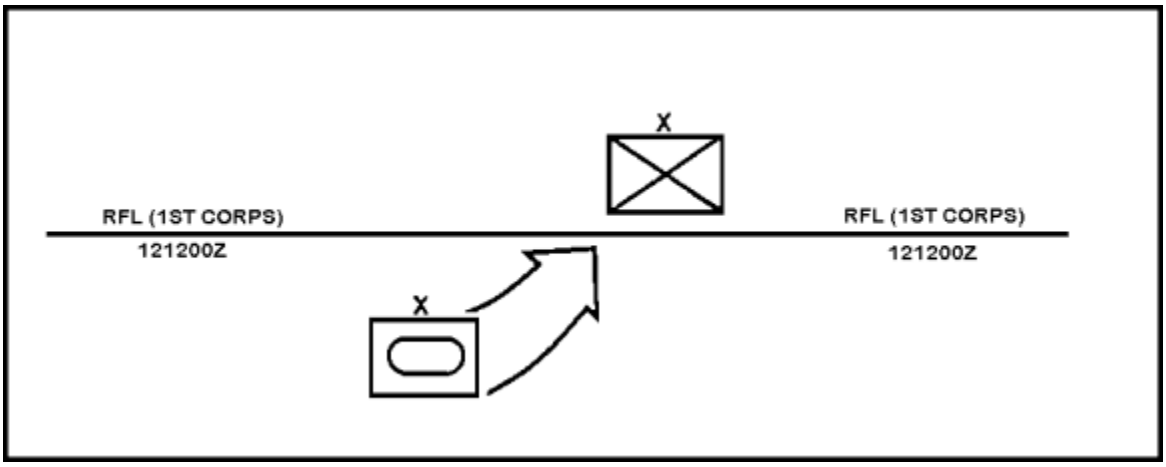


FIGURE 15. RESTRICTIVE FIRE LINE

Airspace Coordination Area (ACA). The airspace coordination area is a block of airspace in the target area in which friendly aircraft are reasonably safe from surface fires (Figure 16). Occasionally, it may be a formal measure (a three dimensional box in the sky). More often it is informal. The purpose of the ACA is to allow the simultaneous attack of targets near each other by multiple fire support means, one of which is normally air.

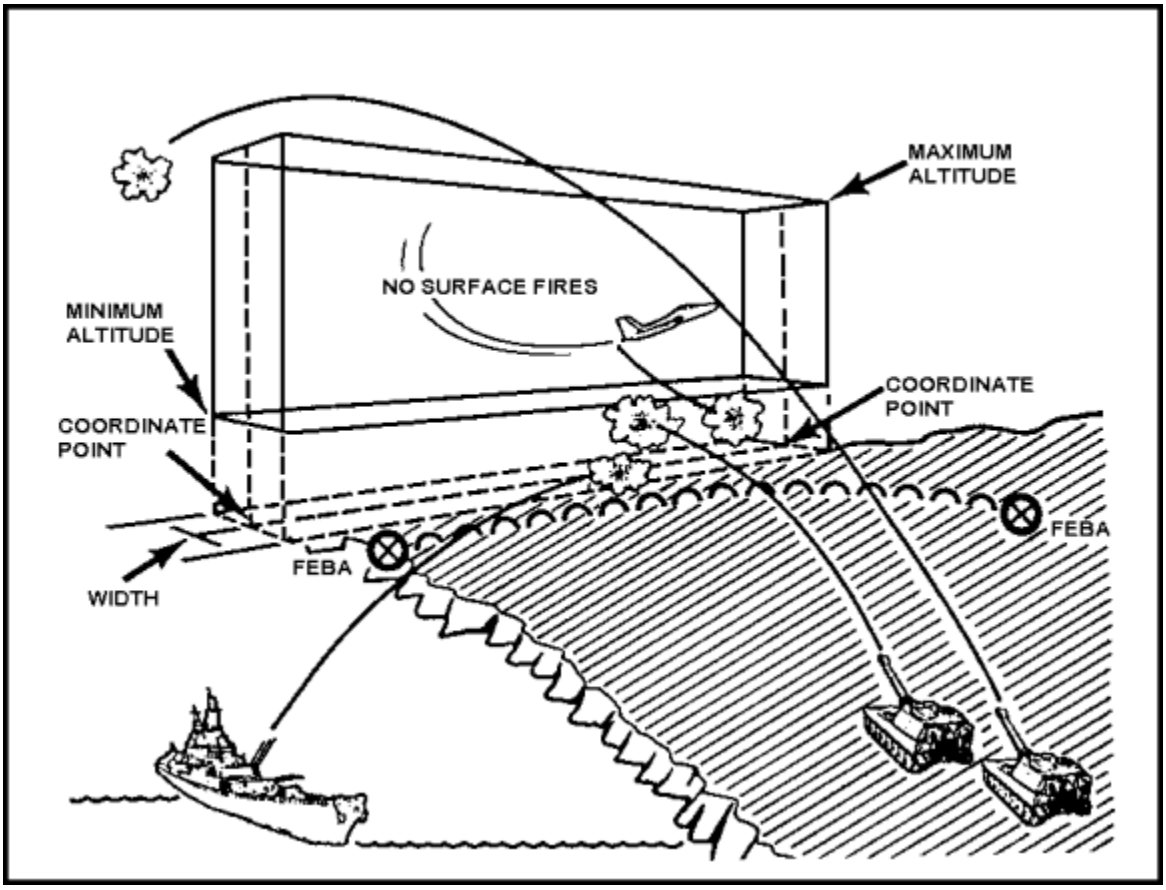


FIGURE 16. AIRSPACE COORDINATION AREA

For example, air support aircraft, field artillery, and naval gunfire can attack the same target complex. They can also attack targets close to one another while operating within the parameters of an established formal airspace coordination area. Usually, the ACA is established by a separate brigade or higher level commander.

The ACA's location is coordinated with the airspace management element. It is above the target area as recommended by an air liaison representative. The size of the area is dictated by the type of aircraft and the ordnance in use. Vital information defining the formal ACA includes minimum and maximum altitudes, a baseline designated by grid coordinates at each end, the width (either side of the baseline), and the effective times. Information concerning the area is disseminated in the same way as for the coordinated fire line.

Since implementation of the formal ACA takes a significant amount of time, an informal ACA may be established to provide safety to close air support aircraft at low levels in the target area. The informal ACA can be established by using a time and distance separation. This designates a specific terrain feature to provide separation between surface-to-surface and air-delivered fires.

An example would be to designate an east-west road as the ACA and at the same time to direct air support to stay north of the road. You must also restrict FA and naval gunfire to airspace and targets south of the road. The informal ACA may be established to task force level and is not normally displayed on maps, charts, and overlays.

No-Fire Area. A no-fire area (NFA) (Figure 17) is an area into which no fires or effects of fires are allowed. Two exceptions are--

- When the establishing headquarters approves fires temporarily within the NFA on a mission-by-mission basis.
- When an enemy force within the NFA engages a friendly force. The commander may engage the enemy to defend his force.

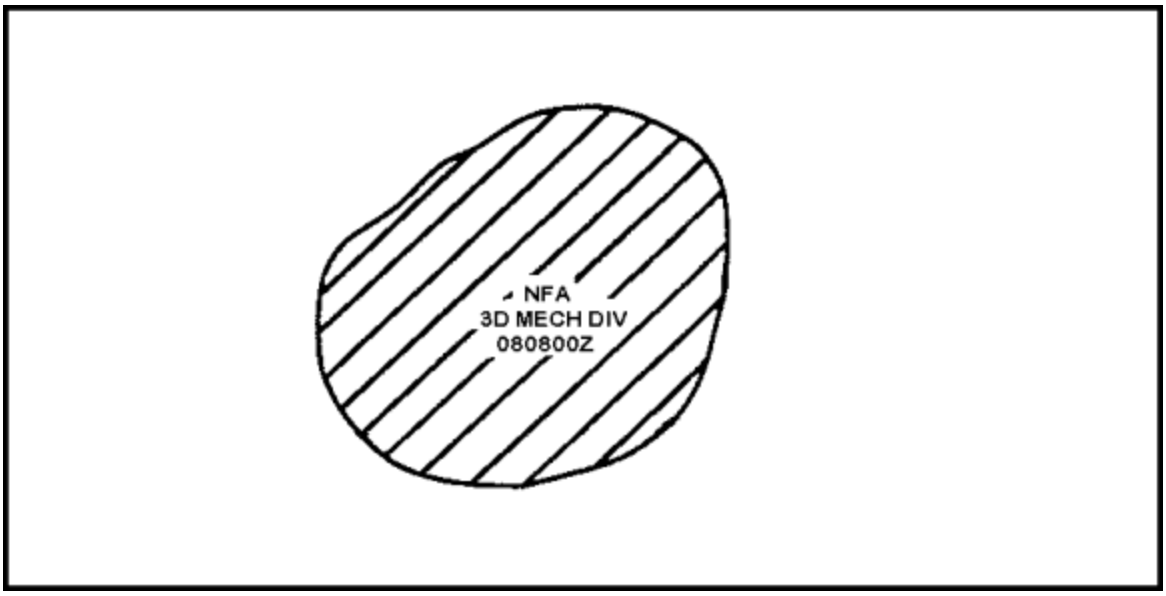


FIGURE 17. NO-FIRE AREA

The purpose of the NFA is to prohibit fires or their effects in the area. Usually, it is established by a division or corps on identifiable terrain, when possible. Also, it may be located by grid or by a radius (in meters) from a center point. Like other fire support coordination measures, its location is disseminated through both maneuver and fire support channels to concerned levels.

Restrictive Fire Areas. A restrictive fire area (RFA) (Figure 18) is an area in which specific restrictions are imposed. Fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. The purpose of the RFA is to regulate fires into an area according to the stated restrictions. It is established by the maneuver battalion or higher echelons of command. On occasion, an RFA may be established by a company operating independently. Usually, it is on identifiable terrain, by grid or by a radius (in meters) from a center point. Its location is disseminated in the same manner as that of the coordinated fire line. Restrictions may be shown on a map or an overlay, or reference can be made to an operations order (OPORD) that states the restrictions.

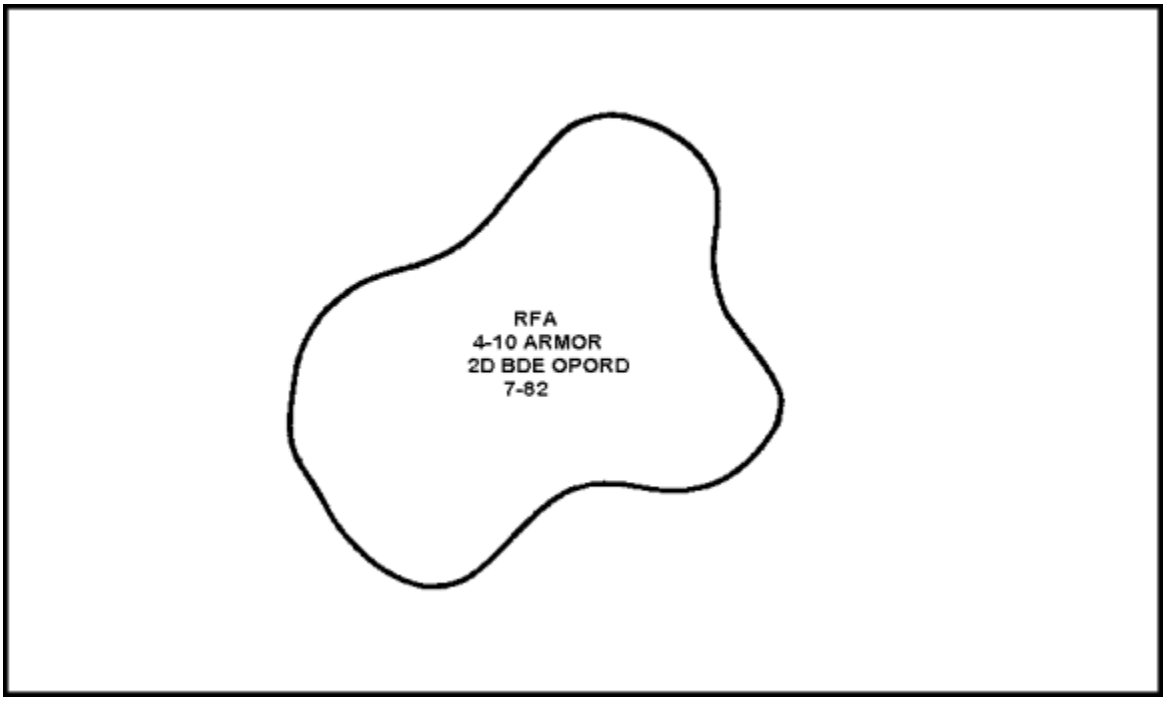


FIGURE 18. RESTRICTIVE FIRE AREAS

You have just learned about the graphic portrayal of fire support coordinating measures. The next learning event will discuss the fire support personnel's role in developing the operation order.

Learning Event 5: THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION AND KNOWLEDGE OF THE TASK BY IDENTIFYING THE ELEMENTS WHICH COMPRISE, AND RESPONSIBILITIES FOR PREPARATION OF, PARAGRAPH 3a(2) AND THE FIRE SUPPORT SUBPARAGRAPH OF THE OPERATION ORDER.

This learning event describes and presents examples of the documents prepared and used by fire support personnel in tactical operations. It provides detailed information on the preparation and dissemination of the various documents required in planning and coordinating fire support.

THE FIRE SUPPORT PLAN

The commander's selected course of action, his concept of the operation, and all guidance given during the planning process form the basis for the development of the operation order (Figure 19). The OPORD merges maneuver and fires. Paragraph 3 of the OPORD outlines how the supported commander wants to use his fire support and maneuver assets. STANAG 2014 prescribes standard formats for the OPORD and its supporting documents. This learning event implements STANAG 2014 as it pertains to fire support operations and functions.

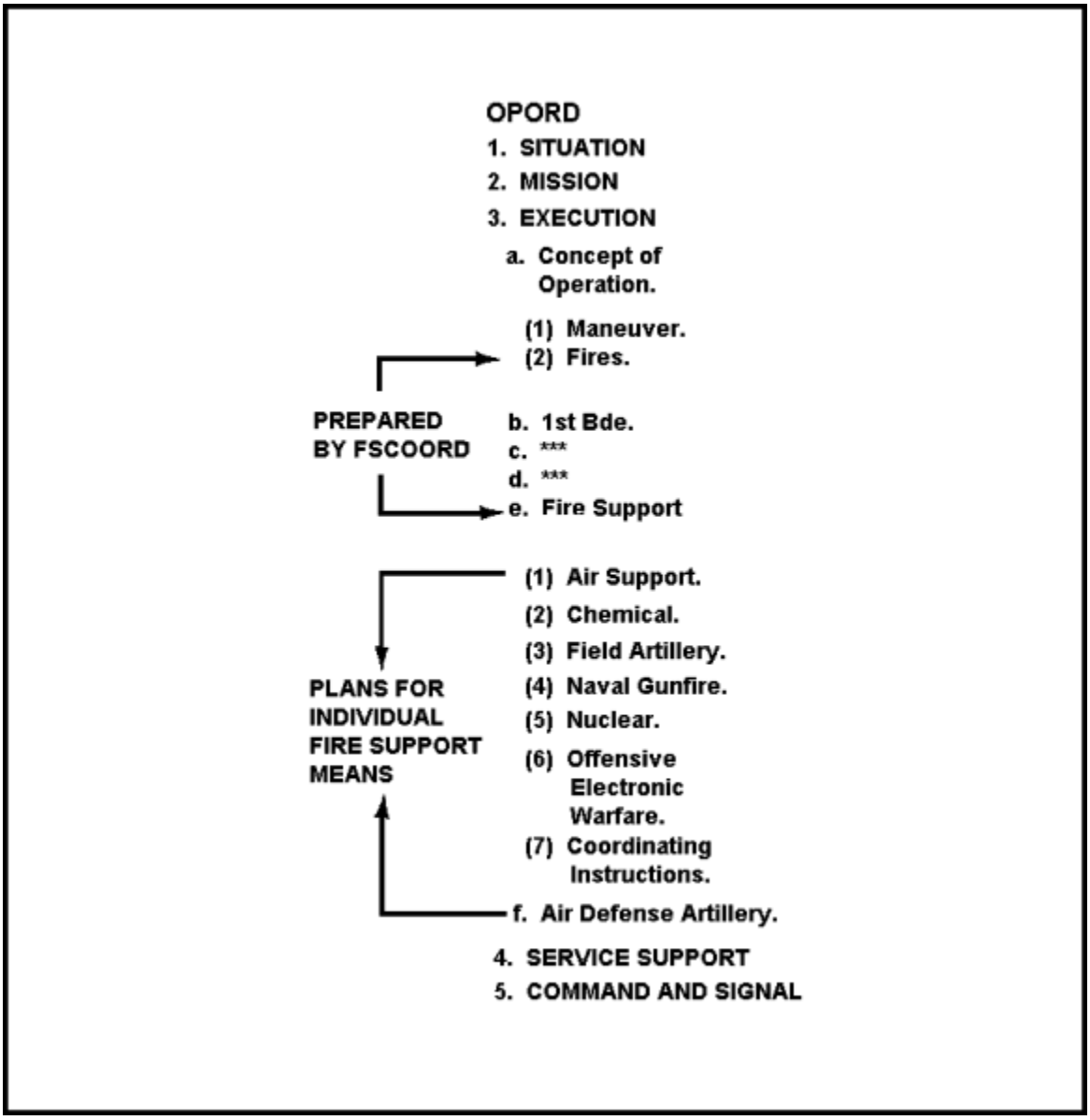


FIGURE 19. OPORD FORMAT

Responsibilities in Planning Fire Support

The FSCOORD prepares the fires portion of the Concept of Operation subparagraph of the OPORD. He also coordinates the preparation of the Fire Support subparagraph (or annex) that constitutes the fire support plan. The fire support plan includes a subparagraph for each fire support agency (means) involved in the operation.

Input for these subparagraphs is prepared by the appropriate fire support representatives within the fire support element. If the Fire Support subparagraph needs amplification, the FSCOORD prepares a fire support annex. Table 14, lists the responsibilities of personnel involved in formal fire support planning.

TABLE 14. FORMAL FIRE SUPPORT PLANNING RESPONSIBILITIES

LEVEL	AGENCY	INDIVIDUAL RESPONSIBLE	FIRE SUPPORT PLAN	FIRE SUPPORT ANNEX	FIELD ARTILLERY SUPPORT PLAN	AIR FIRE PLAN	NAVAL GUNFIRE SUPPORT PLAN	NUCLEAR SUPPORT PLAN	CHEMICAL SUPPORT PLAN	OFFENSIVE ELECTRONIC WARFARE PLAN
CORPS	Main FSE	FSCOORD	■	■			■	■		
	NBC element	Chemical officer							■	
	Corps artillery TOC	FA operations officer	■	■	■					
	EW support element	EW staff officer								■
	Air support operations center	G3 air[1]				■				
DIVISION	Main FSE	FSCOORD[2]	■	■			■	■		
		Assistant G3 air[1]				■				
		Naval gunfire officer					■			
	Div arty TOC	Div arty S3			■					
	NBC element	Chemical officer							■	
	EW support element	EW staff officer								■
BRIGADE	FSE	FSCOORD[3]	■	■				■		
		S3 air[1]				■				
		Naval gunfire liaison officer					■			
		Chemical officer							■	
	Direct support FA battalion fire direction center				■					

[1] Assisted by air liaison officer
[2] Normally done by an assistant FSCOORD
[3] Normally done by the fire support officer

The fire support plan for a force headquarters need not totally depend on target input from subordinate elements. The fire support plan tells subordinate commanders what they are to do and what they need to know to accomplish their mission. The plan should not address items in SOPs and should not include "how to implement" instructions to individual fire support agencies. That type of information should be addressed in SOPs or in implementing instructions issued after the receipt of the fire support plan. Once the fire support plan is prepared, it is disseminated and distributed as a part of the force operation order (Figure 20 and Table 15).

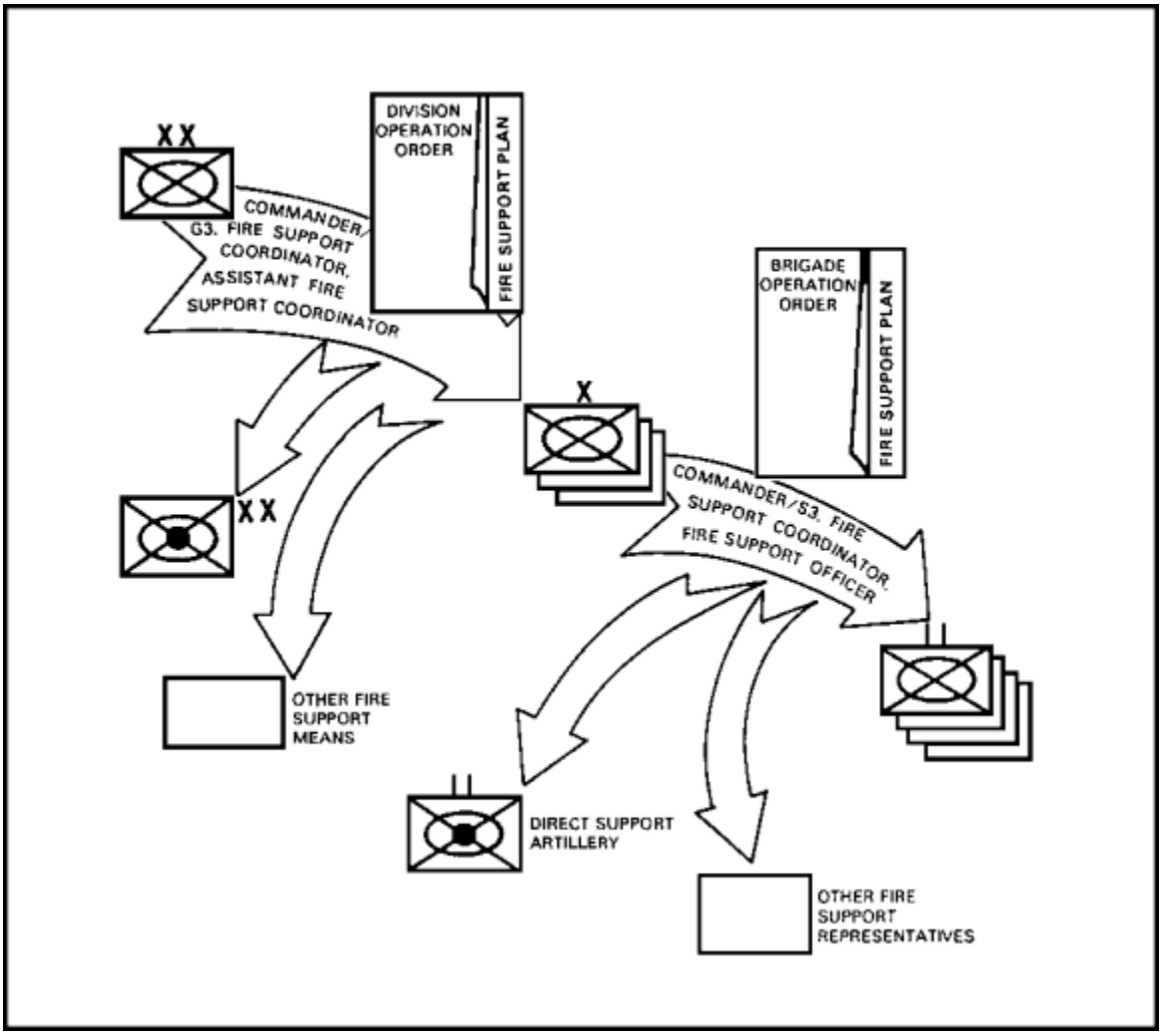


FIGURE 20. FIRE SUPPORT PLAN DISSEMINATION

The suggested distribution of the fire support plan is presented in Table 15.

TABLE 15. SUGGESTED DISTRIBUTION OF FIRE SUPPORT PLANS

	SUPPORTING MANEUVER UNITS	SUPPORTING FA UNITS	SUPPORTING USAF UNITS	ANGLICO AND SUPPORTING SHIPS	SUPPORTING ARMY AVIATION UNITS	SUPPORTING ADA UNITS	SUPPORTING ORDNANCE UNITS
Fire support plan	R	R	R	R	R	R	D
Fire support annex	R	R	R	R	R	R	D
Field artillery support plan	D	R	D	D			D
Air fire plan	D		R		D	D	
Naval gunfire support plan	D			R			
Nuclear support plan	D	R	D			D	D
Chemical support plan	D	R	D		D		D
Attack helicopter support plan	D		D		R	D	D
Air defense support plan	D		D		D	R	R

LEGEND:

R = Required
D = Discretionary

CONCLUSION

In this lesson, you have learned about targeting terms, procedures, and techniques for targeting, and the fundamentals of fire support planning and coordination, The data on characteristics of artillery cannons and rockets should allow you to select the weapon that will give you the effect desired. You have learned how to identify the planning criteria and implementing procedures for a final protective fire.

This will allow elements to withdraw from enemy contact once the desired effect has been accomplished. You have also covered the graphic portrayal of fire support coordinating measures and the development of the operation order subparagraph which pertains to fire support planning.

Combining the knowledge of these lessons will enable you to plan and execute fire missions and combat the Threat forces in modern warfare.

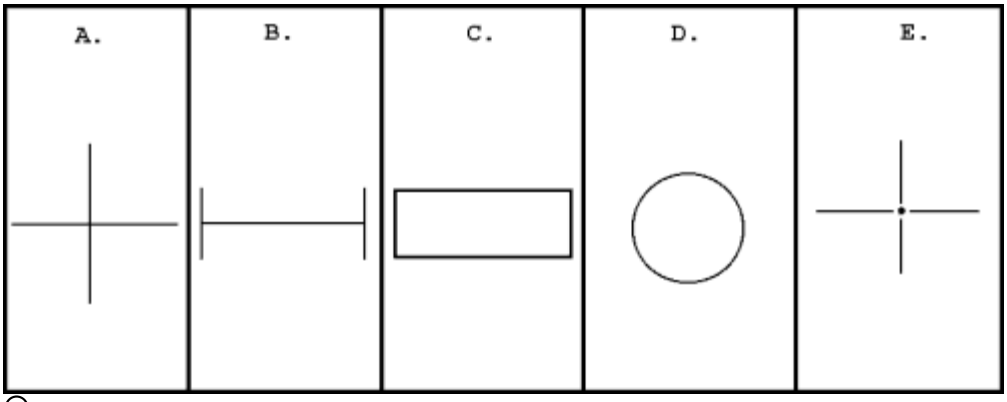
Practice Exercise
Lesson 3

Instructions The following items will test your understanding of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, review that part of the lesson which contains the portion involved.

SITUATION

You are a maneuver element commander in the European theater. Your unit is preparing to conduct a movement to contact operation. You are planning the necessary fire support and preparing the documentation necessary for implementing the required fire support coordination.

1. As a maneuver commander, you must plan targets for battle plans with the help of your fire support officer. During this planning stage, you must make map overlays, using target symbols for the different types of targets. The symbol that you use to indicate special ammunition (that is, chemical/nuclear) is



○ A.

B.

C.

D.

E.

2. You are planning artillery support for an infantry company. In planning the support, you have been allocated a platoon of L119 howitzers. You can plan on

   A. 20 rounds per minute per artillery piece.

   B. 5 rounds per minute per artillery piece.

   C. 10 rounds per minute per artillery piece.

   D. 1 round per 1.5 seconds per artillery piece.

3. You are planning fire support with your FSO. You have been allocated a battery of towed 155-mm howitzers M114A2s. The maximum rate of fire you can plan on is
    A. 4 rounds per minute per piece of equipment.
    B. 10 rounds per minute from the battery.
    C. 1 round every 1.5 seconds per piece of equipment.
    D. 1.5 rounds per minute per piece of equipment.

4. You are coordinating with the FSO for the final protective fires (FPFs) for your operation. The purpose of final protective fire is
    A. designed to break off enemy engagement attacks.
    B. designated to prevent danger close situations.
    C. support at the maximum range of indirect fire weapons.
    D. prearranged barrier of fire designated to protect friendly troops.

5. You are planning final protective fires (FPFs) for your operation. You must
    A. start impacting fires at 200 meters from the FPF line.
    B. correct fires to within 50 meters of the FPF line.
    C. announce "danger close" before starting the fire support.
    D. identify the grid the friendly troops are in.

6. You are planning the fire support for your operation with the FSO. You have a coordinated fire line (CFL) 200 meters to your front, established by the brigade commander. This line is established
    A. to restrict fires beyond the line.
    B. to open up the area in front to fire support.
    C. as a boundary for your assigned mission.
    D. as a zone boundary for your fire support.

7. You and the FSO are planning fire support which includes direct, indirect, and air support fires at the same time. For aircraft to maneuver through an area which has direct and indirect fires, the aircraft pilots must be
    A. provided the coordinates of the airspace coordination area.
    B. provided map overlays of the mission area.
    C. voice-guided through the area by forward observers.
    D. provided the coordinates of all firing elements.

8. You are developing an operation order (OPORD) for the mission. After completion of the OPORD, you

   A. distribute it to the Air Force, Navy, and ADA units.

   B. distribute it to the supported maneuver unit, supporting ADA unit, and USAF unit.

   C. disseminate it to ANGLICO, Army Aviation unit, and USAF supporting unit.

   D. disseminate it to FSCOORD, direct support FA, and other fire support means/representatives.

9. You are instructing several new company commanders in procedures for preparing an OPORD. You tell them they should not

   A. describe each target in the plan.

   B. develop the fire support plan for your element.

   C. include how-to-implement instructions to the fire support agencies.

   D. include the coordinates of the targets in the OPORD.
